

Dr. WILLCOLKE'S AND MESSRS. FRYERS'
UNITED, NEW AND IMPROVED SYSTEM OF
ARITHMETICAL
AND
MENTAL CALCULATIONS.

FIFTH EDITION, CAREFULLY REVISED AND CORRECTED,
WITH 300 ADDITIONAL CALCULATIONS, AND NUMEROUS EXPLANATIONS,
NOT INTRODUCED IN THE PRECEDING EDITIONS.

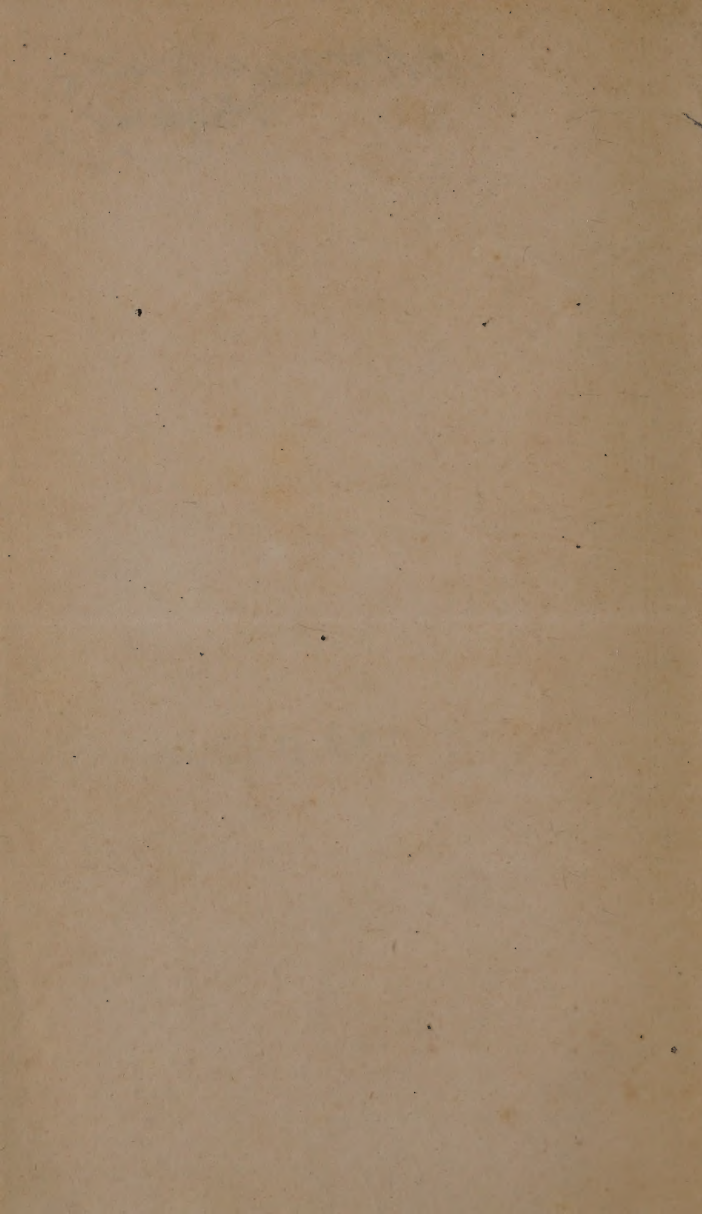
This edition contains several examples, showing the CONTRAST between
the usual and the present mode of Calculating.—See page 159.

FIVE SHILLINGS.

54916/B

WILLCOLKES, Dr

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Sheffield





Thomas W Fryer
London Sept 1835

THE UNITED
NEW AND MUCH ADMIRERD SYSTEM
OF
ARITHMETIC
AND
MENTAL CALCULATIONS,
OF
DOCTOR WILLCOLKES
AND MESSRS. T. AND T. W. FRYER;
BEING THE RESULT OF MANY YEARS' STUDY,
NEVER BEFORE PRINTED.

FIFTH EDITION,
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This novel and useful Treatise contains a great variety of excellent and illustrative rules, by which the student is enabled to make all the calculations necessary for every kind of business, frequently in less than one tenth of the time and figures usually employed. It is peculiarly adapted to Bankers, Merchants, Tradesmen, &c. and is of the greatest importance to all classes, being the most simple and easy System of Arithmetic, that could be devised for the use of all scholastic establishments. The publishers have submitted it to the examination of such gentlemen as they considered most competent to judge of its real value, and they have made trial of it by giving private lectures to upwards of two thousand pupils: from all they have received testimonials expressive of unqualified approbation, a few of which are given in this work—to have inserted them all would from their number have become impossible, but they are retained by the publishers for the inspection of those who are desirous of seeing them.

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1836.



Entered at Stationers' Hall.

ADDRESS TO THE PUBLIC.

WE have been frequently solicited, since we commenced giving Lectures on Dr. Willcolkes's novel and valuable System of Arithmetic and Mental Calculations, to publish the same from the original manuscript of the Doctor, for the benefit of the rising generation.—Not knowing, however, how such a work would be received, we thought it more prudent to wait till we should have ascertained the opinion of the public as to its value.

Having submitted it to the consideration of many bankers, merchants, and other tradesmen, and also to the heads of schools of both sexes, persons fully competent to judge of its value, who have all expressed their unqualified approbation of it—and having within the last three years given Lectures to more than two thousand pupils, of the greatest respectability, many of them occupying a high station in life, who have given the most flattering testimonials of its practical utility, we are encouraged to offer it to the public, accompanied by a few of the very many testimonials we have received from all the classes of persons just mentioned.

We have taken the greatest possible care in arranging all the Calculations in the clearest and most comprehensive manner, having giving distinct Rules for each kind of Calculations, commencing with various articles purchased at certain given pence per *lb.* or yard, &c. &c. pointing out how Fractions either in quantity or price are to be done; the next Rule clearly explains how to work all questions where shillings and pence are concerned, as also where Fractions occur in both quantity and price. The Publishers flatter themselves, the Rules given, with the Examples for calculating *cwts. qrs. and lbs.* at the various prices annexed to them per *lb.* will give the same degree of satisfaction that it has in no

case failed to do, to the vast numbers who have made a trial of it. They also trust that the peculiarly short and simple method for ascertaining the average price and total amount of various goods, purchased at different prices, will be found extremely useful. By that method both are discovered with ease and simplicity; while in the ordinary way of working, such calculations are well known to occupy great length of time and a great number of figures—Interest is the next thing that presents itself to our notice; and the great satisfaction the Rules respecting it have given, and the value in which they are held by those who have tried the System, will be best found by referring to the following testimonials, in which the brevity and accuracy of the method contained in those Rules are especially commended. There is a very short and easy Rule for ascertaining what Rate per Cent. you obtain, by laying out certain Sums in the purchase of Property of certain yearly value; as also a method to enable Persons to know what sum of Money should be given for an Estate, &c. in order to obtain any desired percentage for the Money so laid out: both these Rules, we trust, will be found valuable and useful.

In this work is presented a copious and useful Rule for Mental Calculation, which has been found highly serviceable by the Publishers in exercising and exciting the mental powers of their pupils; and has been attended, in all cases, with such beneficial results, as to cause the practice of it to be adopted by many heads of schools and private families, and others concerned in the education of youth.

Towards the Conclusion of the Work will be found many Questions, with the Answers only, in order to impress the System more deeply on the minds of Juvenile Pupils, by their working them agreeably to the short methods already laid down.

An acquaintance with the first four Rules of Arithmetic (the ground-work of all Arithmetical knowledge) Addition, Multiplication, Subtraction and Division, is all that is necessary towards the clear understanding and practical use of this short and comprehensive System. The advantages that may be derived from the study of which, by persons of any age or of either sex,

may be easily seen by referring to the following testimonials, which prove of what great benefit it has been to those of all ages, from ten to fifty, and of what great value they consider the information which it has imparted to them.

The trifling advance too often made in this science by ladies is frequently a source of much annoyance to them, and considering how valuable an addition a competent knowledge of Arithmetic is to their education, is much to be regretted; the Publishers trust, that by the introduction of this System into Ladies' Seminaries, this defect may be obviated, and that they may learn a correct and simple way of making such calculations as fall within the line of their duty, at a tenth part, too, of the time and trouble usually necessary.

It is also part of the design of the following work to supply what is principally wanted—an Arithmetic for Tradesmen. It appears evident that the youth who is completed in Arithmetic in the ordinary way, stands in need of a much shorter method to enable him to enter a bank, or a counting-house, or to fill a situation behind a counter. It is to be hoped, that by making him acquainted with this simple and admirable plan (which can be done in a very short time) the difficulties under which he labours will be removed.

Although the treatises already published on the subject of Arithmetic are numerous, and many of them excellent in their kind; one more is still necessary to supply their deficiencies with respect to that branch of the art which seems to be the most important to a tradesman; the arithmetic peculiar to merchants and bankers, &c., is almost treated as a kind of mystery that ought to be confined to their offices. Very little of those elegant and ready methods of operations is known, except to those who acquire it by actual practice, and oftentimes it happens that persons, who are engaged in traffic, experience the want of previous instruction, and find themselves obliged on occasion to have recourse to others, or to the tedious and uncertain operations of the school-boy's method.

The Plan undertaken is to comprehend in this one volume, the several Branches of commercial Arithmetic, and to show the most compendious and ready

methods of performing the calculations proper to each respectively. In the execution neither care nor labour has been spared to render the whole as complete as possible, the common methods of the counting-house, itself, are in many particulars very much improved by easier and shorter rules entirely new, the fruit of many years' practice in the employment of teaching.

This work differs in the following respects from most treatises on Arithmetic—they are generally printed in two books, the one containing the Questions, the other the Solutions or Key to them. We however have introduced into this one book the Questions and also Solutions and Explanations so clear and explicit that no one can have any difficulty in thoroughly comprehending them. It is hoped therefore that the price charged will be considered reasonable.

The Publishers are determined to prosecute any person or persons who shall be guilty of publishing this work in its own or any other name, or pirating any of the calculations herein contained; and any person giving information to them of any attempts of this description shall be handsomely rewarded.

This short Preface, with the Testimonials inserted, and the names and places of residence of many who have studied it, will, we trust, be a sufficient introduction to a liberal and enlightened public.

We remain with the greatest respect,

The Public's most devoted

And very obedient Servants,

THOMAS FRYER and SON.

ARITHMETIC.

EULOGIUM on the late DR. WILLCOLKES'S unrivalled System of "Arithmetical and Mental Calculations," as imparted by the Messrs. FRYER, at their Apartments, HOUNDS-GATE, NOTTINGHAM.

HAIL, EDUCATION ! Heavenly maid !
Thy flow'rets bloom but never fade.—
'Tis thine own celestial light
Dispels the gloom of mental night ;—
Illumes the heart, the mind sets free,
And points to IMMORTALITY !

And WILLCOLKES, hail ! whose active mind,
It was this lovely ART to find ;
Which, when the human mind's perplex'd,
By dark and abstruse Questions vex'd,
Casts an halo o'er the breast,
And gives its perturbations rest.

'Tis INSTANT, as the breaking light
First glancing through the shades of night ;
'Tis *brilliant* as the lightning's glare,
When flashing through the midnight air ;
'Tis *sweeter* than the sweetest flowers,
When wash'd afresh by balmy showers.

'Tis *lasting* as the human mind,
That's cultivated and refin'd ;
'Tis *easy* as the thoughts which glow
Within a heart unknown to wo ;
'Tis *calm* as are the zephyr's sighs,
Which, breathing fragrance, mount the skies !

'Then hail ! thou heaven-aspiring art ;
And hail ! to those who thee impart.

Ye FRYERS, hail ! who deathless name
 Give unto WILLCOLKES' hard-earn'd fame !
 Thousands in Britain give you praise,
 And round your brows entwine the bays.

Proceed then in your pleasing task ;
 Long, long, in Fortune's sunshine bask ;
 And when you've pass'd life's fleeting years,
 GENIUS shall, with dewy tears,
 Your names enbalm ; and on your tomb,
 Sweet and unfading flowers shall bloom !

Nottingham, Sept. 23rd, 1831.

* * * The above verses, which are truly characteristic of the important ART they but feebly eulogize, have been addressed to Messrs. Fryer, the justly celebrated Teachers of the (late) renowned Dr. Willcolkes's admiral system of "Arithmetical and Mental Calculations," by a person whose long experience in the education of Youth, combined with his mathematical abilities, it is presumed, duly qualify him to be a competent judge of the intrinsic merits of the subject which has called forth the above unsolicited eulogy.

ON DOCTOR WILLCOLKES'S NEW SYSTEM OF ARITHMETIC.

ADDRESSED TO MESSRS. FRYER.

PRACTICE, the dread of boys at school,
 Now penetrates the thickest skull ;
 For Quarter, Hundred Weight and Pound,
 A short and simple rule is found.

If you the average cost would find,
 'Tis solv'd correctly in the mind ;
 Would you Assimilation know,
 This system in a trice 'twill show.

From Interest, at length is taken
 A mass of useless calculation.—
 Experience gives great support,
 And highest praise is due :—in short,
 'Twill ever recommended be
 By your admiring pupil,

G——.

NAMES

OF SOME OF THE

NOBLEMEN, BISHOPS, JUDGES, MERCHANTS,

PRINCIPALS OF SEMINARIES, TRADERS, ETC. ETC.

Who have been Pupils of Messrs. Fryer, and who have not only given them most favourable Testimonials, but have earnestly solicited them to print a Work of such vital interest to the present and rising generation, and of which, they have bespoken numerous Copies when ready.

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HULL.

Mrs. and Misses Lutwidge.
 Miss Adshead.
 Messrs. Gleadow, Ayre and Boyes, Merchants.
 Mr. C. Cummins, professor of Music.
 Messrs. Fearne, Banks and Cammell.
 William Gawtress, esq. Editor of Advertiser

LINCOLN.

Mr. H. Leech, Grocer.
 W. Brocklesby, esq. Governor of County Jail.
 Edward Fowler, esq. Alderman.
 Edward Betham, esq.

BOSTON.

Messrs. Roberts, Merchants, &c.
 ——— Jacobs, Jones, Hildred and Rainforth.
 ——— Bishop, Eno, Smith and Goodacre.
 ——— Bushby, Parratt, Tewson, Clarke and Higgs.

IRELAND.

Col. Grey, Scots Greys,	Dublin.
Samuel Crawford, esq. Solicitor,	ditto.
James Fitzwilliams, esq. Merchant, near	ditto.
Daniel Jones, esq.	
R. Maingay, esq, Fitzwilliam Street,	Dublin.
Mrs. M. Crofton, Harcourt Street,	ditto.
——— La Touche, Marlay,	near ditto.
J. Gason, esq. M. D. Bray,	ditto.
Mrs. Clement, ditto,	ditto.
J. Brush, esq. ditto,	ditto.
Robert D. Spread, esq. Merrion Square,	ditto.
Mrs. Schoales, Leeson Street,	ditto.
R. Mullins, esq. Fitzwilliam Square,	ditto.

TESTIMONIALS.

The Publishers beg to present to the notice of the public, a few Copies of the Testimonials received, which they trust will be found truly satisfactory.

The young Gentlemen of my School have been instructed by Mr. Fryer in his short and valuable System of Arithmetic, with which I am very much pleased.

J. FEARON, Clerk.

Liverpool, Soho Street Seminary, Nov. 19th. 1829.

MISS HORSFALL feels satisfied with the improvement her elder Pupils have made under the Instruction of Mr. Fryer.

Wakefield, Nov. 8th. 1830.

MR. FRYER has introduced his valuable System of Arithmetic into my School, and I am happy to add my Testimony to its worth, as also to Mr. Fryer's efficacious mode of communicating it to his pupils. His methods of Calculation are decidedly the best and easiest that have yet been introduced, and well worthy of public attention.

WILLIAM FENTON.

Belle Vue School, Wakefield, Nov. 20th. 1830.

HAVING carefully examined Mr. Fryer's System, I have no hesitation in recommending it, as presenting uncommonly brief and expeditious, and at the same time correct methods of Calculation, as applied to the practical questions commonly occurring in business. Mr. Fryer's method of calculating Interest is particularly neat.

SAMUEL WILSON.

Fulneck Academy, Oct. 22nd. 1830.

I HAVE great pleasure in giving testimony to the excellence of Messrs. Fryer's System of Arithmetic, and consider it well worthy the celebrity which it has already attained.

WILLIAM HEALD, jun. Clerk.

THE mode of calculation taught by Messrs. Fryer will be found of real advantage to the persevering Pupil; the principles are correct, simple, and capable of application to an indefinite extent.

H. ROBERSON.

Healds Hall, Dec. 14th. 1830.

I FEEL pleasure in adding my testimony to that of others respecting Mr. Fryer's System of Arithmetic and Mental Calculation, as being peculiarly simple and compendious, and well adapted to Commercial purposes. It only requires to be known in order to be appreciated. It will recommend itself to the public notice.

DAVID CRAIG.

Well House Academy, Feb. 11th, 1831.

MARY BRADY has received a Course of Lectures from Thomas Fryer, and considers his System to accomplish what he promises ; it greatly shortens many Arithmetical operations, and is particularly suited to Mental Calculation.

Leavy Greave, Sheffield, 3rd. Month, 1831.

MISS GREEN has pleasure in adding her testimony in favour of Mr. Fryer's System of Arithmetic.
Sheffield, March 13th. 1831.

MRS. SPILLING would think herself unjust to Mr. Fryer, were she to withhold her meed of commendation of the System adopted by him for simplifying Arithmetical operations.

Primrose Cottage, Ecclesfield.

Dear Sir,

IN thanking you for your kind attendance at the Grammar School, I beg leave to express my warm approval of your peculiar System of Arithmetic, &c. If the sanction of my name can add any weight to the testimonies already borne to its merit, I subscribe myself yours most respectfully.

PERCIVAL BOWEN, Clerk.

Grammar School, Sheffield, May, 1831.

MRS. HAUGH is happy to add her most willing testimony to the merit and value of Mr. Fryer's System of Arithmetical Calculation, which is rendered by the simplicity and ingenuity of his plan a *right royal road* to the usually dry and operose study of that necessary and useful science.

South Parade, Doncaster, May 30th. 1831.

CHARLES BAKER is very happy in adding his testimonial to the great merits of Mr. Fryer's System of Mental Arithmetic, intending to adopt it in the Instruction of the Deaf and Dumb, so far as it may be found applicable, and not doubting that its introduc-

tion in Schools generally would be interesting and serviceable to the Pupils.

Yorkshire Institution for the Deaf and Dumb.
Eastfield, Doncaster, June 1st. 1831.

MRS. BRAILSFORD is glad to add her testimony to the preceding in favour of Mr. Fryer's System of Arithmetic, he having given a Course of Lectures to the young Ladies of her Establishment, quite to her own satisfaction and to the Benefit of her Pupils.

Church Hill, Doncaster, June 21st. 1831.

MR. FRYER has delivered a Course of Lectures to the Pupils of Bloom Lodge, of which Miss Pye very highly approves.

Broom Lodge, June 10th. 1831.

MR. FRYER has delivered a Course of Lectures to the young Gentlemen of Mr. Cuthbert's Establishment, and Mr. Cuthbert has great pleasure in expressing his high approval of Mr. Fryer's excellent System of Arithmetic, which cannot be too strongly recommended to the attention of the Public.

Beech Field House, Doncaster, June 21st. 1831.

ABOVE twenty of the Boarders of Grantham Grammar School, who have received a Course of Lectures from Mr. Fryer, have expressed themselves well satisfied with the same, as also with Mr. Fryer's attention during the time.

ROBERT GORDON ANDREWS, A. M. Head Master.
Grantham, Sept. 29th. 1831.

In the above school, the celebrated Sir Isaac Newton received a great part of his Education.

MONSIEUR C. L. LASEGUE has much pleasure in joining his approbation of Mr. Fryer's System of Arithmetical and Mental Calculation, being easier than any he ever knew. As it would be useless to say more on the excellency of the Method, having been approved by numbers of eminent Men, he merely presents his

thanks to Mr. Fryer for his kindness and indefatigable energy, from which his Children have experienced much improvement.

Rutland Terrace, Stamford, Oct. 24th. 1831.

I THINK the plan of Arithmetic taught by Mr. Fryer deserving commendation. The Rules are much simplified, and the Solutions very ingenious.

J. SHELLIBEER, Clerk.

Oundle Grammar School, Nov. 1831.

THOMAS FRYER has delivered his Course of Lectures on Arithmetic to the Scholars of the Friends' School, Lawrence Street.

The undersigned has pleasure in expressing his great satisfaction, and does not hesitate to recommend the System, as well worthy the notice of those engaged in education. Independently of the advantage derived from the numerous and ingeniously short methods unfolded by T. Fryer, the undersigned considers that concentrating the attention of the Scholars upon the subject of Calculation, has been very useful; in conclusion he would add, that permanence is secured to the System by the Scholars retaining their Books, containing a variety of useful Rules, and illustrative Calculations.

JOHN FORD, Superintendent.

York, 25th. of 2nd. Month, 1831.

I HAVE heard Mr. Fryer examine a pupil of his, (a girl of ten years of age) and to my astonishment she almost instantaneously answered abstruse Arithmetical Calculations, which by the common method would require from 20 to 50 figures.

JOEL HAWKYARD.

Ashton, May 29th. 1830.

MY Brother and I have taken a Course of Lectures in Mr. Fryer's System of Arithmetic, of which we highly approve and recommend it accordingly.

W. CRONHELM.

Huddersfield.

In addition to the above Testimonial by my Son, I beg to say that I consider Mr. Fryer's method of Calculation exceedingly brief and practical. However expert the student may be in the usual way of reckoning, he will find in Mr. Fryer's rules a valuable acquisition, and additional facility in Calculations.

F. W. CRONHELM.

Halifax, August 27th. 1830.

I THINK the System of Mr. Fryer desirable for those who wish to acquire quickness of Calculation.

F. RAWSON.

Huddersfield Bank.

WE think Mr. Fryer's System very useful to those who wish to acquire a ready and correct method of Calculation. The Rules for Interest are particularly useful, and easy of Comprehension.

W. L. BROOK.

C. H. SHAW.

J. SHAW.

W. SHAW, jun.

J. SWIFT.

I CONCEIVE the conciseness of Mr. Fryer's System of Arithmetic only to be equalled by its correctness, and without hesitation can affirm, that it supersedes all other methods, in facilitating the practical use of Calculations.

J. PRIESTLY.

Brazen Nose College, Oxford.

MR. FRYER's second Lesson to my family this morning has so fully convinced me of the brevity, perspicuity, accuracy and utility of the System taught by him, that I feel in duty bound to express my cordial approbation of it; and further to add, I consider it would be an injustice to youth to debar them of the benefit of Messrs. Fryer's invaluable instructions.

W. NICHOLSON.

Bradford, October 9th. 1830.

MR. FRYER has attended two of my Daughters, and I am fully satisfied that his system of Arithmetical Calculations is perfectly accurate, and well deserving the attention which others, with myself, most willingly certify it justly merits. I shall be glad to hear that Families in general, and Schools in particular, will avail themselves of this easy and rapid, but I believe sure mode of Instruction.

HENRY HEAP.

Vicar of Bradford, Oct. 16th. 1830.

MR. FRYER'S System of Arithmetic appears to me to have considerable merit, and greatly to facilitate all calculations to which it is applicable.

EDWARD BAINES, Editor to the Leeds Mercury.
Jan. 6th, 1831.

WE think Mr. Fryer's System of Calculation is well adapted to expedite the acquisition of that important branch of Education; the method is at once simple, and a knowledge of it very easily acquired.

THOMAS KILBY.

M. KENDALL.

E. JACKSON.

St. John's Parsonage, Wakefield, Nov. 18th. 1830.

WE the undersigned having received a Course of Lectures from Mr. Fryer in his concise System of Arithmetic and Mental Calculations, have derived much benefit, and would strongly recommend the same to all persons desirous of obtaining a quick and ready mode of Calculation.

THOMAS SYKES.

W. H. SERLE.

W. FENNELL.

W. D. HAMPSHIRE.

Wakefield, Nov 16th. 1831.

MESSRS. Swain and Ralph's Families have taken Lessons from Mr. Fryer, and are highly pleased with the expeditious method he has taught them of calcula-

ting sums, which in the usual method adopted would require much more time and labour.

Gommersal, Dec. 16th. 1830.

WE consider Mr. Fryer's System of Mental and Arithmetical Calculation well worth the attention of the Public, as we have received instruction from him and feel much benefited.

JOHN HALLILEY, jun.
HENRY SMITH.

Dewsbury, 1831.

WE have attended with pleasure and advantage a Course of Lectures, given by Mr. Fryer on his concise System of Arithmetic, and feel it a duty to Mr. Fryer to express our unqualified approbation. His method of Calculating Interest we consider perfectly accurate, while it is simple and intelligible to all.

C. ROYLE.

THOMAS FIRTH.

JOSEPH SYKÈS.

ROBERT NAYLOR.

JOHN BURNLEY.

JOSEPH OATES.

H. R. HORSFALL.

HENRY OATES.

EDWIN FIRTH.

GEORGE SCOTT.

Heckmondwyck, Jan. 27th. 1831.

MR. FRYER has instructed three of my Children in his System of Arithmetic and Mental Calculation, and I am perfectly satisfied that it is well worth the attention of all Parents, Masters, and Mistresses of Seminaries. It is at once brief, accurate and simple, and the short ample operation may be performed with the utmost readiness and with the use of a very few figures.

W. C. STAFFORD, Editor of the York Gazette.

April 2nd. 1831.

JOSEPH STANLEY having taken a Course of Lectures in Messrs. Fryer's System of Arithmetic and Mental Calculations, highly approves of the mode of communicating the same, and thinks it admirably suited to give the highest satisfaction.

Sheffield, March 6th. 1831.

SEVERAL of my family having received Lectures from Mr. Fryer, in his System of Arithmetic, I beg to add my opinion of its utility, owing to the facility in its abbreviated mode, and also as confirming the powers of Calculation by Mr. Fryer's interrogative System.

BENJAMIN FENTON.

Arundel Street, Sheffield, April 16th. 1831.

HAVING received a Course of Lectures of Messrs. Fryer, we beg to add our testimony to its utility, and feel great pleasure in recommending it as a clear, concise and pleasing System of Arithmetic.

THOMAS FIGDEN.

J. SCHOFIELD.

CHARLES WRIGHT.

JOHN THOMAS FURNISS.

JAMES BROWN.

WILLIAM RILEY.

CHARLES HOLLAND.

T. PARKERS.

JOSEPH HADFIELD.

T. and B. SMITH.

Sheffield, March, 1831.

WE have examined Mr. Fryer's System of Arithmetic and entirely approve of it.

THOMAS RAIKES.

ROBERT RAIKES, jun.

Welton, May 12th. 1831.

WE the undersigned having received a Course of six Lessons in Dr. Willcolkes's System of Arithmetic, have derived considerable benefit therefrom, and would confidently recommend the instruction to all who are likely to be engaged in Mercantile pursuits.

T. CARLTON.

T. STONE.

E. MIDGLEY.

A. MIDGLEY.

J. MIDGLEY.

T. APPELYARD.

R. J. HORSLEY.

P. HORSLEY.

R. WELLS.

J. FARR.

R. BECKETT.

M. BUTTERHILL.

Doncaster, July, 1831.

My Son has attended Mr. Fryer at Doncaster, and I

have every reason to feel pleased and satisfied with his System of teaching Arithmetic.

GEORGE PARKER.

Doncaster.

HAVING received a Course of Lectures from Mr. Fryer on his admirable and concise System of Arithmetical and Mental Calculations, we can with great confidence most strongly recommend the same to those persons, who are desirous of obtaining a quick, correct and ready mode of Calculation.

J. HODGSON.

D. GRIFFITHS.

H. WIGFIELD.

JOSEPH BADGER.

W. BINGLEY.

THOMAS NEWTON.

HENRY PULLIN.

H. WOODHEAD.

W. WOODHEAD.

Rotherham, April 2nd. 1831.

I HAVE been present at several of Mr. Fryer's Lectures, and consider his mode of Calculation very short and convenient.

W. EVANS, Allestree Hall, Derbyshire,

November 5th. 1831.

MR. FRYER having communicated to me his System of Arithmetic, I have no hesitation in saying, that I consider it very convenient.

G. J. VERNON, Sudbury Hall.

Derby, Nov. 16th. 1831.

MR. FRYER's System was new to me, and I find it extremely convenient and useful, particularly his method of calculating Interest.

SAMUEL EVANS.

Derby, Nov. 21st. 1831.

MR. FRYER can point out several short cuts, out of the high road to Arithmetic.

C. H. COLVILLE.

Duffield, Dec. 3rd. 1831.

MR. FRYER'S System was quite new to me, and I thought the acquisition of it valuable to my family and myself.

P. GELL.

Derby, Dec. 7th. 1831.

Having received instructions from Mr. Fryer, I think his System is in all respects superior to every other, and in Calculating Interest quite incomparable.

W. H. WAYNE, jun. CLERK.

St. Peter's College, Cambridge.

I THINK Mr. Fryer's System of Arithmetic very convenient and useful.

JOHN HARRISON, Clerk.

Duffield Bank, Derbyshire, Dec. 28th. 1831.

THE extreme simplicity and ingenuity of Dr. Willcolkes's System of Arithmetical and Mental Calculations, as communicated by Mr. Fryer, is, I consider, not merely useful, but important to all whose situation in life requires Arithmetical operations.

I most willingly bear testimony to the interest and utility of the course of Lectures delivered by Mr. Fryer to several of my Pupils.

R. W. GOODAL.

Bristol Street School, Birmingham, Feb. 1832.

MISS WHITTINGHAM has pleasure in bearing testimony to the excellence and utility of Mr. Fryer's System of Mental Calculation, and is obliged by his assiduous attention to her Pupils.

Bellfield, near Birmingham, Feb. 1832.

G. JONES has much pleasure in recommending Mr. Fryer's method of teaching Arithmetic and Mental Calculations.

Snow Hill, March, 1832.

My two sons have received a course of Lessons from Mr. Fryer in Arithmetic and Mental Calculations,

which have been highly beneficial, and has much improved them. And having for many years very partially practised the System in Business myself, I have no hesitation in recommending Mr. Fryer's excellent System to general notice.

THOMAS BADGER.

Dudley on the Hill, May 8th. 1832.

MRS. R. WELLS begs to add her testimony of approbation to Dr. Willcolkes's System of Arithmetic, which, for neatness, brevity and perspicuity, is particularly adapted to Youth. The simple and concise method of calculating Interest, has rendered it quite an amusement to some of Mrs. Well's elder Pupils, who feel much indebted to Mr. Fryer for his attention.

Cassius House, Cheltenham, March, 1833.

MRS. WELLER has great pleasure in adding her testimony to the merits and advantages of Mr. Fryer's System of Arithmetic, as well as to his uniform attention to her pupils.

Bath Villa, Cheltenham, April, 1833.

WE the undersigned being convinced, from having received a Course of Lessons from Mr. Fryer, of the importance and advantage arising from a knowledge of his Arithmetical and Mental Calculations, most willingly subscribe our names in acknowledgement.

CHARLES FREAME.

THOMAS FREAME.

JOHN HOOPER.

M. MORGAN.

ALFRED SCANDRETT.

J. WILKES.

J. PEMBERTON.

J. YOUNG.

THOMAS REYNOLDS.

GEORGE BIRLEY.

W. CUBLEY.

J. H. ROUSE.

CALEB T. ROUSE.

W. H. THORNBERRY.

E. BAKER.

E. GOODMAN.

JOSEPH HOPKINS.

J. YATE.

M. D. LINGHAM.

W. OSBORN.

J. PITT.

M. D. LINGHAM.

R. LILLINGTON.

H. DUNN.

Worcester, July, 1832.

THE MISSES ASHWIN consider Mr. Fryer's Lectures on Arithmetic highly useful and interesting, and particularly desirable, as lessening the difficulties, and making agreeable to young Ladies, a study they are inclined frequently to think dry and unpleasant.

Field House, Prestbury, Cheltenham, April, 1833.

DR. BEALE COOPER has taken advantage of Mr. Fryer's arrival at Evesham to enter into the detail of his System of shortening the usual methods of Arithmetical Calculation, and he has been so much pleased and satisfied as to its superiority over the ordinary methods, as to recommend it to Parents and Instructors of Youth, as ably explained and illustrated by the personal explanation and method of teaching adapted by Mr. Fryer.

Mansion House, Bengeworth, Evesham, May 6th. 1833.

MRS. BARNETT has pleasure in testifying her approbation of the excellency and utility of Mr. Fryer's System of Mental Calculation, and is obliged by his assiduous attention to her Pupils.

Brunswick House, Leamington Spa, May 29th. 1833.

MISS THRUPP and MISS STARTIN have pleasure in bearing testimony to the excellence of Mr. Fryer's System of Mental Calculation, and they feel obliged by his attention to their Pupils.

Portland Street, Leamington, May 29th. 1833.

As a readiness at Calculating by Mental process only the amount of goods bought or sold, or by Interest or Discount to be allowed, is a desirable acquisition, not only in mercantile life, but also in the superintendency of every household, I cheerfully subscribe my recommendation of *Dr. Willcolkes's brief System of Mental Arithmetic* as taught by Mr. Fryer. It is most simple

in its rules, most concise in its operations, and the most easy to attain of any that have come under my observation. Ten of my pupils, in Six Lessons, acquired considerable facility at Calculating, by *Mental process only*, a variety of general questions, and if all pupils in Arithmetic were exercised only one hour in the week, in Mental Calculations by the Rules suggested in this System, which is indeed *Practice in an abridged form*, it would not fail to make them expert Accomptants. My best wishes attend Mr. Fryer; whilst I take the liberty of reminding him and all under whose notice these lines may fall, that, however useful or desirable this System may be, we ought not to rest satisfied with any *Mental Arithmetic*, which does not carry on the process of its Calculations into eternity, and which does not make the LORD Jesus the unit and *multiple* of all happiness.

JOHN WILLIAMS, D. D.

Stroud, Gloucestershire, Sept. 29th. 1832.

The above is the opinion of the Rev. Dr. Williams, on the System of Arithmetical Calculations communicated by the Authors and Publishers of this Work, and as Dr. W. has considered it correct to give his opinion on a subject of much more importance, he leaves persons to form their own opinions, as to the propriety of his sentiments. Should any think the latter part of the foregoing Testimonial misplaced, they are respectfully informed, that all the Testimonials are inserted exactly as they were given. The Publishers, however, consider the Rev. Dr. W. a competent judge of the subjects he has attended to, and would deem it a breach of propriety in them to omit any part of the opinions of those enlightened individuals who have patronized them; to all of whom, they take this opportunity of acknowledging the obligation they consider themselves placed under, and of returning their most sincere thanks.

ARITHMETICAL TABLES.

NUMERATION.

Units	1
Tens	1 2
Hundreds	1 2 3
Thousands	1, 2 3 4
Tens of Thousands ...	1 2, 3 4 5
C. of Thousands.....	1 2 3, 4 5 6
Millions	1; 2 3 4, 5 6 7
X. of Millions...	1 2; 3 4 5, 6 7 8
C. of Millions	1 2 3; 4 5 6, 7 8 9

CURRENT MONEY.

4 Farthings make ...	1 Penny
12 Pence.....	1 Shilling
20 Shillings, 1 Pound, or Sovereign	

PENCE.

d.	s.	d.
20 are	1	8
24 ...	2	0
30 ...	2	6
36 ...	3	0
40 ...	3	4
48 ...	4	0
50 ...	4	2
60 ...	5	0
70 ...	5	10
72 ...	6	0
80 ...	6	8
84 ...	7	0
90 ...	7	6
96 ...	8	0
100 ...	8	4
108 ...	9	0
120 ...	10	0

SHILLINGS.

s.	£.	s.
20 are	1	0
30 ...	1	10
40 ...	2	0
50 ...	2	10
60 ...	3	0
70 ...	3	10
80 ...	4	0
90 ...	4	10
100 ...	5	0
110 ...	5	10
120 ...	6	0
130 ...	6	10
140 ...	7	0
150 ...	7	10
160 ...	8	0
170 ...	8	10
180 ...	9	0

MULTIPLICATION.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

Note, this table may be applied to division by reversing it: as the 2's in 4 are 2; the 2's in 6 are 3, &c.

Tables of Weights and Measures.

PRACTICE.

OF A POUND, OR SOVEREIGN.

s. d.	£.
10 0 are	1 half
6 8 ...	1 third
5 0 ...	1 fourth
4 0 ...	1 fifth
3 4 ...	1 sixth
2 6 ...	1 eighth
2 0 ...	1 tenth
1 8 ...	1 twelfth
1 4 ...	1 fifteenth
1 3 ...	1 sixteenth
1 0 is	1 twentieth

OF A SHILLING.

d.	s.
6 are	1 half
4	1 third
3	1 fourth
2	1 sixth
1½ is	1 eighth
1	1 twelfth

OF A PENNY.

farth.	d.
2 are	1 half
1 is	1 fourth

OF A TON.

Cwt.	T.
10 are	1 half
5 ...	1 fourth
4 ...	1 fifth
2½ ...	1 eighth
2 ...	1 tenth
1 is	1 twentieth

OF A HUNDRED.

gr. lb.	Cwt.
2 0 are	1 half
1 0 is	1 fourth
0 16 are	1 seventh
0 14 ...	1 eighth

TROY.

24 gr. make	1 dwt.
20 dwt. ...	1 ounce
12 oz. ...	1 pound

AVOIRDUPOIS.

16 dr. make	1 oz.
16 oz.	1 lb.
14 lb.	1 stone
28 lb.	1 quarter
4 qr.	1 cwt.
20 cwt.	1 ton

APOTHECARIES'.

20 gr. make	1 scruple
3 scr.	1 dram
8 dr.	1 ounce
12 oz.	1 pound

WOOL.

7 lb. make	1 clove
2 cloves	1 stone
2 stones	1 tod
6½ tods	1 wey
2 weys	1 sack
12 sacks	1 last

ALE AND BEER.

2 pints make	1 quart
4 quarts ...	1 gallon
9 gallons ...	1 firkin
2 firkins ...	1 kilder.
2 kilderkins	1 barrel
1½ barrel ...	1 hhd.
2 barrels ...	1 punch.
3 barrels ...	1 butt.

WINE.

2 pints make	1 quart
4 quarts ...	1 gallon
10 gallons ...	1 anker
42 gallons ...	1 tierce
63 gallons ...	1 hhd.
2 hhd.	1 pipe
2 pipes ...	1 tun

LONG MEASURE.

3 barley-corns	1 inch
12 inches	1 foot
3 feet	1 yard
6 feet	1 fathom
5½ yds.	1 pole
40 poles	1 furlong
8 fur.	1 mile
3 miles	1 league
69½ miles	1 degree

LAND MEASURE.

9 feet make	1 yard
30½ yds.	1 pole
40 poles	1 rood
4 roods	1 acre

CLOTH MEASURE.

2½ inch. make	1 nail
4 nails	1 quar.
3 qrs.	1 Fl. ell
4 qrs.	1 yard
5 qrs.	1 En. ell
6 qrs.	1 Fr. ell

TIME.

60 sec. ...	1 minute
60 min. ...	1 hour
24 hours ...	1 day
7 days ...	1 week
4 weeks ...	1 month

DRY MEASURE.

2 gall. make	1 peck
4 pecks ...	1 bushel
4 bushels ...	1 sack
8 bushels ...	1 quarter
4 quarters ...	1 chaldron
10 quarters ...	1 last

SOLID MEASURE.

1728 inches	1 solid foot
27 feet ...	1 yard

COAL MEASURE.

3 bushels ...	1 sack
36 bushels ...	1 chaldron

CUSTOMARY

WEIGHT OF GOODS.

A firkin of butter is	56 lb.
A firkin of soap	64
A barrel of pot ashes	200
A barrel of anchovies	50
A barrel of soap	256
A barrel of butter ...	224
A fother of lead, 19 cwt. 2 qrs. or	2184
A barrel of candles...	120
A stone of iron or shot	14
A gallon of train oil	7½
A fagot of steel	120
A stone of glass	5
A seam of glass 24 stone, or	120
A roll of parchment, 5 dozen skins	
A barrel of figs from nearly 96 to	360

UNPRECEDENTED SYSTEM
OF
ARITHMETIC
AND
MENTAL CALCULATIONS.

FIRST GENERAL RULE.

To know the Amount of any Number of *yards, lbs. gallons, stones, ells*, or any other article, requiring to be made up at any given pence, from $\frac{1}{4}d.$ to $11\frac{3}{4}d.$ both inclusive :

Find the amount of the Number of *yards, lbs. gallons, &c. &c.* at one penny, and multiply it by the price ; when a farthing shall occur with any number of given pence (as $3\frac{1}{4}d.$ $4\frac{1}{2}d.$ or $9\frac{3}{4}d.$ &c.) add one quarter, or $\frac{1}{4}$, of what it amounts to at one penny. When a half-penny shall occur with any given pence, add half the amount of what it comes to at one penny, and when 3 farthings shall occur, add three quarters of what it amounts to at one penny, which may be done in one or two lines, as the student shall think fit.

The cause of this Rule is so clearly demonstrated, that giving any further explanation than the Rule and Examples themselves contain, would be superfluous ; the desire of the Publishers being to make the System throughout, perfectly intelligible to persons of ordinary capacity, they trust will be sufficient apology for introducing at the beginning of each Rule, particularly the first, examples so very simple : they may rest assured that every thing that can be useful shall present itself as they proceed. *All have not the same powers of comprehension.*

A variety of examples solved by both methods are here laid down in the following

EXAMPLES.

WHAT will 36 *lbs.* cost at 11*d.* per *lb.* ?

36 at 1 penny equal to 3*s.*

multiplied by 11

£1..13 *Ans.*

What will 96 yards of any article come to at 7*d.* per yard?

$$\begin{array}{r} 96 \text{ at one penny} = 8s. \\ \text{multiplied by } 7 \\ \hline \text{£}2..16 \text{ Ans.} \end{array}$$

What will 24 stones come to at 10*d.* per stone?

$$\begin{array}{r} 24 \text{ at one penny} = 2s. \\ 10 \\ \hline \text{£}1 \text{ Ans.} \end{array}$$

What will 108 gallons come to at 5*d.* per gallon

$$\begin{array}{r} 9s. \text{ at } 1 \text{ penny.} \\ 5 \\ \hline \text{£}2.. 5 \text{ Ans.} \end{array}$$

What will 48 *lbs.* come to at 9*d.* per *lb.*?

$$\begin{array}{r} 4s. \text{ at } 1 \text{ penny.} \\ 9 \\ \hline \text{£}1..16 \text{ Ans.} \end{array}$$

What will 120 ells come to at 10*d.* per ell?

$$\begin{array}{r} 10s. \text{ at } 1 \text{ penny.} \\ 10 \\ \hline \text{£}5 \text{ Ans.} \end{array}$$

What will 60 yards come to at 8*d.* per yard?

$$\begin{array}{r} 5s. \text{ at } 1 \text{ penny.} \\ 8 \\ \hline \text{£}2 \text{ Ans.} \end{array}$$

What will 132 gallons come to at 11*d.* per gallon?

$$\begin{array}{r} 11s. \text{ at } 1 \text{ penny.} \\ 11 \\ \hline \text{£}6.. 1 \text{ Ans.} \end{array}$$

What will 72 *lbs.* come to at 7*d.* per *lb.*?

$$\begin{array}{r} 6s. \text{ at } 1 \text{ penny.} \\ 7 \\ \hline \text{£}2.. 2 \text{ Ans.} \end{array}$$

What will 144 quarts come to at 5*d.* per quart?

12*s.* at 1 penny.

$$\begin{array}{r} 5 \\ \hline \pounds 3 \text{ Ans.} \end{array}$$

What will 29 ounces come to at 9*d.* per ounce?

2*s.* 5*d.* at 1 penny.

$$\begin{array}{r} 9 \\ \hline \pounds 1.. 1.. 9 \text{ Ans.} \end{array}$$

What will 55 come to at 7*d.* each?

4*s.* 7*d.* at 1 penny.

$$\begin{array}{r} 7 \\ \hline \pounds 1..12.. 1 \text{ Ans.} \end{array}$$

What will 68 come to at 10*d.* each?

5*s.* 8*d.* at 1 penny.

$$\begin{array}{r} 10 \\ \hline \pounds 2..16.. 8 \text{ Ans.} \end{array}$$

What will 87 pints come to at 11*d.* per pint?

7*s.* 3*d.* at 1 penny.

$$\begin{array}{r} 11 \\ \hline \pounds 3..19.. 9 \text{ Ans.} \end{array}$$

What will 99 stones come to at 8*d.* per stone?

8*s.* 3*d.* at 1 penny.

$$\begin{array}{r} 8 \\ \hline \pounds 3.. 6.. 0 \text{ Ans.} \end{array}$$

What will 1 *cwt.* = 112 *lbs.* come to at 9*d.* per *lb.*?

9*s.* 4*d.* at 1 penny.

$$\begin{array}{r} 9 \\ \hline \pounds 4.. 4.. 0 \text{ Ans.} \end{array}$$

What will 119 *lbs.* come to at 7*d.* per *lb.*?

9*s.* 11*d.* at 1 penny.

$$\begin{array}{r} 7 \\ \hline \pounds 3.. 9. 5. \text{ Ans.} \end{array}$$

What will 133 *lbs.* come to at 11*d.* per *lb.* ?

$$\begin{array}{r} 11s. \ 1d. \text{ at } 1 \text{ penny.} \\ 11 \\ \hline \pounds 6.. \ 1.. 11 \text{ Ans.} \end{array}$$

What will a pipe = 126 *gal.* come to at 9*d.* per gallon ?

$$\begin{array}{r} 10s. \ 6d. \text{ at } 1 \text{ penny.} \\ 9 \\ \hline \pounds 4.. 14.. \ 6 \text{ Ans.} \end{array}$$

What will 154 yards come to at 5*d.* per yard ?

$$\begin{array}{r} 12s. \ 10d. \text{ at } 1 \text{ penny.} \\ 5 \\ \hline \pounds 3.. \ 4.. \ 2 \text{ Ans.} \end{array}$$

What will 171 yards come to at 8*d.* per yard ?

$$\begin{array}{r} 14s. \ 3d. \text{ at } 1 \text{ penny.} \\ 8 \\ \hline \pounds 5.. 14.. \ 0 \text{ Ans.} \end{array}$$

What will 189 *lbs.* come to at 11*d.* per *lb.* ?

$$\begin{array}{r} 15s. \ 9d. \text{ at } 1 \text{ penny.} \\ 11 \\ \hline \pounds 8.. 13.. \ 3 \text{ Ans.} \end{array}$$

What will 199 come to at 7*d.* each ?

$$\begin{array}{r} 16s. \ 7d. \text{ at } 1 \text{ penny.} \\ 7 \\ \hline \pounds 5.. 16.. \ 1 \text{ Ans.} \end{array}$$

What will a tun = 252 *gal.* come to at 10*d.* per gallon ?

$$\begin{array}{r} \pounds 1.. \ 1.. \ 0 \text{ at } 1 \text{ penny.} \\ 10 \\ \hline \pounds 10.. 10.. 0 \text{ Ans.} \end{array}$$

What will 40 weeks come to at 7*d.* per day ?

$$\begin{array}{r} 280 = \pounds 1.. \ 3.. \ 4 \text{ at } 1 \text{ penny.} \\ 7 \\ \hline \pounds 8.. \ 3.. \ 4 \text{ Ans.} \end{array}$$

What will 50 weeks = 350 days come to at 10*d.* per day?

£1.. 9.. 2 at 1 penny.

10

£14..11.. 8 *Ans.*

What will a leap year of 366 days come to at 11*d.* per day?

£1..10.. 6 at 1 penny.

11

£16..15.. 6 *Ans.*

What will 560 *lbs.* of sugar cost at 7*d.* per *lb*?

£2.. 6.. 8 at 1 penny.

7

£16.. 6.. 8 *Ans.*

What will 980 yards of calico cost at 10*d.* per yard?

£4.. 1.. 8 at 1 penny.

10

£40..16.. 8 *Ans.*

What will 999 gallons come to at 9*d.* per gallon?

£4.. 3.. 3 at 1 penny.

9

£37.. 9.. 3 *Ans.*

When quarters, halves, or three quarters, shall occur in the quantity, make them up with the yards, at the rate of 1 penny per yard, viz. for a quarter of a yard reckon $\frac{1}{4}$ *d.* for half yard, add $\frac{1}{2}$ *d.* &c. see

EXAMPLES.

WHAT will $42\frac{1}{2}$ yards cost at 4*d.* per yard?

3*s.* 6 $\frac{1}{2}$ *d.* at 1 penny.

4

s.14.. 2 *Ans.*

What will $65\frac{1}{4}$ come to at 8*d.* each?

5*s.* 5 $\frac{1}{4}$ *d.* at 1 penny.

8

£2.. 3.. 6 *Ans.*

What will $87\frac{3}{4}$ ounces come to at $3d.$ per ounce?

$7s. 3\frac{3}{4}d.$ at 1 penny.

3

£1.. 1.. 11 $\frac{1}{4}$ Ans.

What will $99\frac{3}{4}$ come to at $8d.$ each?

$8s. 3\frac{3}{4}d.$ at 1 penny.

8

£3.. 6.. 6 Ans.

What will $112\frac{1}{2}$ come to at $10d.$ each?

$9s. 4\frac{1}{2}d.$ at 1 penny.

10

£4.. 13.. 9 Ans.

What will $126\frac{1}{4}$ ounces come to at $7d.$ per ounce?

$10s. 6\frac{1}{4}d.$ at 1 penny.

7

£3.. 13.. 7 $\frac{3}{4}$ Ans.

What will $140\frac{3}{4}$ yards come to at $10d.$ per yard?

$11s. 8\frac{3}{4}d.$ at 1 penny.

10

£5.. 17.. 3 $\frac{1}{2}$ Ans.

What will 48 *lbs.* come to at $7\frac{1}{4}d.$ per *lb.*?

48 at 1 penny = 4s.

$7\frac{1}{4}$

£1.. 9.. 0 Ans.

Here we multiply the 4s.
(what it comes to at 1d.)
by 7, and add in the
quarter of 4s. what it
comes to at $\frac{1}{4}d.$

What will 60 *lbs.* come to at $5\frac{1}{2}d.$ per *lb.*?

60 at 1 penny = 5s.

$5\frac{1}{2}$

£1.. 7.. 6 Ans.

What will 72 *lbs.* come to at $9\frac{3}{4}d.$ per *lb.*?

72 at 1d. = 6s.

$9\frac{3}{4}$

£2.. 18.. 6 Ans.

Here the 6s. what it comes to
at 1 penny, is multiplied by 9,
and the 3 quarters at 6s. added
in, what it comes to at $\frac{3}{4}d.$ equal
to 4s. 6d.

What will 84 gallons come to at $11\frac{1}{2}d.$ per gallon?

84 at 1 penny = 7s.

$$\begin{array}{r} 11\frac{1}{2} \\ \hline £4.. 0.. 6 \text{ Ans.} \end{array}$$

What will 96 lbs. come to at $10\frac{3}{4}d.$ per lb.?

96 at 1 penny = 8s.

$$\begin{array}{r} 10\frac{3}{4} \\ \hline £4.. 6 \text{ Ans.} \end{array}$$

What will 108 lbs. come to at $2\frac{3}{4}d.$ per lb.?

108 at 1 penny = 9s.

$$\begin{array}{r} 2\frac{3}{4} \\ \hline \end{array}$$

$$\begin{array}{r} £1.. 4.. 9 \text{ Ans.} \end{array}$$

The 3 quarters of 9s. being 6s. 9d. is added in.

What will 52 yards come to at $6\frac{1}{2}d.$ per yard?

4s. 4d.

$6\frac{1}{2}$

$$\begin{array}{r} £1.. 8.. 2 \text{ Ans.} \end{array}$$

Here in multiplying 4s. 4d. (what it comes to at 1d.) 2s. 2d. what it comes to at $\frac{1}{2}d.$ is brought in.

Or thus, in two lines, 52 at 1d. = 4s. 4d.

$$\begin{array}{r} 6\frac{1}{2} \\ \hline 1.. 6.. 0 \text{ at } 6d. \\ 2.. 2 \text{ at } \frac{1}{2}d. \\ \hline £1.. 8.. 2 \text{ Ans.} \end{array}$$

The young pupil may find the way of doing it in two lines, the easiest to be understood.

What will 144 stones cost at $7\frac{3}{4}d.$ per stone?

144 at 1 penny = 12s.

$$\begin{array}{r} 7\frac{3}{4} \\ \hline £4..13.. 0 \text{ Ans.} \end{array}$$

What will 56 lbs. come to at $7\frac{1}{4}d.$ per lb.?

56 at 1 penny = 4s. 8d.

$$\begin{array}{r} 7\frac{1}{4} \\ \hline £1..13..10 \text{ Ans.} \end{array}$$

1s. 2d. at $\frac{1}{4}d.$ to bring in.

What will 64 lbs. come to at $8\frac{3}{4}d.$ per lb.?

64 at 1 penny = 5s. 4d.

$$\begin{array}{r} 8\frac{3}{4} \\ \hline £2.. 6.. 8 \text{ Ans.} \end{array}$$

4s. to bring in.

What will 78 yards come to at $10\frac{1}{4}d.$ per yard?

78 at 1 penny = 6s. 6d.

$$\begin{array}{r} 10\frac{1}{4} \\ \hline \text{£}3.. 6.. 7\frac{1}{2} \text{ Ans.} \end{array} \quad 1s. 7\frac{1}{2}d. \text{ to bring in.}$$

What will 90 yards come to at $11\frac{3}{4}d.$ per yard?

90 at 1 penny = 7s. 6d.

$$\begin{array}{r} 11\frac{3}{4} \\ \hline \text{£}4.. 8.. 1\frac{1}{2} \text{ Ans.} \end{array} \quad 5s. 7\frac{1}{2}d. \text{ to bring in.}$$

What will 99 yards come to at $8\frac{1}{2}d.$ per yard?

99 at 1 penny = 8s. 3d.

$$\begin{array}{r} 8\frac{1}{2} \\ \hline \text{£}3..10..1\frac{1}{2} \text{ Ans.} \end{array} \quad 4s. 1\frac{1}{2}d. \text{ to bring in.}$$

What will $50\frac{1}{2}$ yards come to at $4\frac{1}{2}d.$ per yard?

$50\frac{1}{2}$ at 1 penny = 4s. $2\frac{1}{2}d.$

$$\begin{array}{r} 4\frac{1}{2}d. \\ \hline s.18.. 11\frac{1}{4} \text{ Ans.} \end{array} \quad 2s. 1\frac{1}{4}d. \text{ to bring in.}$$

Or thus, in two lines: $4s. 2\frac{1}{2}d.$ at 1d.

$$\begin{array}{r} 4 \\ \hline 16..10 \text{ at } 4d. \\ 2.. 1\frac{1}{4} \text{ at } \frac{1}{2}d. \\ \hline s.18..11\frac{1}{4} \text{ Ans.} \end{array}$$

What will $52\frac{3}{4}$ yards come to at $6\frac{1}{2}d.$ each?

$52\frac{3}{4}$ at 1 penny = 4s. $4\frac{3}{4}d.$

$$\begin{array}{r} 6\frac{1}{2} \\ \hline \text{£}1.. 8.. 6\frac{7}{8} \text{ Ans.} \end{array} \quad \begin{array}{l} 2s. 2\frac{3}{8}d. \text{ to bring in,} \\ \text{being the amount} \\ \text{at } \frac{1}{2}d. \end{array}$$

Or thus: $4s. 4\frac{3}{4}d.$ at 1d.

$$\begin{array}{r} 6\frac{1}{2} \\ \hline 1.. 6.. 4\frac{1}{2} \text{ at } 6d. \\ 2.. 2\frac{3}{8} \text{ at } \frac{1}{2}d. \\ \hline \text{£}1.. 8.. 6\frac{7}{8} \text{ Ans.} \end{array}$$

What will $64\frac{1}{4}$ yards come to at $10\frac{3}{4}d.$ per yard?

5s. $4\frac{1}{4}d.$

4s. $0\frac{5}{16}d.$ at $\frac{3}{4}d.$ to bring in.

$$\begin{array}{r} 10\frac{3}{4} \\ \hline \text{£}2..17.. 6\frac{1}{8} \text{ Ans.} \end{array}$$

What will $78\frac{3}{4}$ yards come to at $8\frac{3}{4}d.$ per yard?

$$78\frac{3}{4} \text{ at } 1 \text{ penny} = 6s. 6\frac{3}{4}d. \quad s. \quad d.$$

$$\begin{array}{r} 8 \\ \hline \end{array} \quad 4..11\frac{1}{16}. \text{ at } \frac{3}{4}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 2..17.. 5\frac{1}{16} \text{ Ans.}}}$$

What will 152 yards come to at $7\frac{1}{8}d.$ per yard?

$$\begin{array}{r} 12s. 8d. \\ 7\frac{1}{8} \\ \hline \end{array} \quad 1s. 7d. \text{ at } \frac{1}{8}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 4..10.. 3 \text{ Ans.}}}$$

What will 156 yards come to at $8\frac{3}{8}d.$ per yard?

$$\begin{array}{r} 13s. \\ 8\frac{3}{8} \\ \hline \end{array} \quad 4s. 10\frac{1}{2}d. \text{ at } \frac{3}{8}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 5.. 8..10\frac{1}{2} \text{ Ans.}}}$$

What will 168 yards come to at $9\frac{5}{8}d.$ per yard?

$$\begin{array}{r} 14s. \\ 9\frac{5}{8} \\ \hline \end{array} \quad 8s. 9d. \text{ at } \frac{5}{8}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 6..14..9 \text{ Ans.}}}$$

What will 360 yards come to at $10\frac{7}{8}d.$ per yard?

$$\begin{array}{r} \pounds 1..10 \\ 10\frac{7}{8} \\ \hline \end{array} \quad \pounds 1..6..3. \text{ at } \frac{7}{8}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 16.. 6.. 3 \text{ Ans.}}}$$

What will 960 gallons come to at $11\frac{1}{8}d.$ per gallon?

$$\begin{array}{r} \pounds 4 \\ 11\frac{1}{8} \\ \hline \end{array} \quad 10s. \text{ at } \frac{1}{8}d. \text{ to bring in?}$$

$$\underline{\underline{\pounds 44..10 \text{ Ans.}}}$$

What will $1212\frac{1}{2}$ yards come to at $9\frac{1}{2}d.$ per yard?

$$\begin{array}{r} \pounds 5.. 1.. 0\frac{1}{2} \\ 9\frac{1}{2} \\ \hline \end{array} \quad \pounds 2..10..6\frac{1}{4}. \text{ at } \frac{1}{2}d. \text{ to bring in.}$$

$$\underline{\underline{\pounds 47..19..10\frac{3}{4} \text{ Ans.}}}$$

What will $1500\frac{1}{2}$ yards come to at $8\frac{1}{2}d.$ per yard?

$$\begin{array}{r} \pounds 6.. 5.. 0\frac{1}{2} \\ 8\frac{1}{2} \\ \hline \end{array} \quad \pounds 3..2..6\frac{1}{4}. \text{ to bring in.}$$

$$\underline{\underline{\pounds 53.. 2..10\frac{1}{4} \text{ Ans.}}}$$

What will $1960\frac{1}{2}$ yards come to at $11\frac{1}{4}d.$ per yard?

$$\begin{array}{r} \text{£}8.. 3.. 4\frac{1}{2} \\ \quad 11\frac{1}{4} \\ \hline \text{£}91..17..11\frac{5}{8} \end{array} \quad \text{£}2..0..10\frac{1}{8} \text{ to bring in.} \quad \text{Ans.}$$

What will 240 yards cost at $3\frac{1}{16}d.$ per yard?

$$\begin{array}{r} 240 \text{ at } 1d. \text{ per yard} = \text{£}1 \\ \quad 3\frac{1}{16} \\ \hline \text{£}3.. 1.. 3 \end{array} \quad \text{Ans.}$$

Note, The quantity at $1d.$ per yard is found to be $\text{£}1.$, which is multiplied by the pence of the price, and the $\frac{1}{16}$ of the price at $1d.$ being taken for the $\frac{1}{16}$.

What will 480 yards of cotton goods cost at $7\frac{5}{16}d.$ per yard?

$$\begin{array}{r} \text{£}2 \\ \quad 7\frac{5}{16} \\ \hline \text{£}14.. 7.. 6 \end{array} \quad 7s. 6d. \text{ at } \frac{5}{16}d. \text{ to bring in.} \quad \text{Ans.}$$

What will 963 yards cost at $8\frac{5}{16}d.$ per yard?

$$\begin{array}{r} 960 \text{ at } 1d. = \text{£}4 \\ \quad 8\frac{5}{16} \\ \hline \text{£}3..5. \end{array} \quad \text{to bring in.}$$

Price of 960 yds. = 35..5

$$\begin{array}{r} 3 \text{ at } 8\frac{5}{16}d. = 2.. 2\frac{7}{16} \\ \hline \text{£}35..7.. 2\frac{7}{16} \end{array} \quad \text{Ans.}$$

SECOND GENERAL RULE.

A RULE to know the Amount of any number of *yards, ells, stones, lbs. gallons, quarts, &c. &c.* at any given shillings per yard, &c. &c.

Find the amount at one shilling and multiply it by the price.

Should 3 pence occur in the price, add one quarter of what it amounts to at a shilling: if 4 pence, add one third; if 6 pence add half; if 9 pence, add three quarters at what it amounts to at a shilling.

Should the pence in the price not be an aliquot part of a shilling, find for the shillings by this Rule, and for the pence by the Rule for pence, which amounts add together.

EXAMPLES

to the foregoing Rules.

What will 31 yards come to at 3*s.* per yard?

$$\begin{array}{r}
 31 \text{ at } 1 \text{ shilling} = £1..11 \\
 \text{multiplied by } \underline{\quad 3 \quad} \\
 \hline
 £4..13 \text{ Ans.}
 \end{array}$$

What will 47 yards come to at 7*s.* per yard?

$$\begin{array}{r}
 47 \text{ at } 1 \text{ shilling} = £2.. \quad 7 \\
 \quad \quad \quad \underline{\quad 7 \quad} \\
 \hline
 £16.. \quad 9 \text{ Ans.}
 \end{array}$$

What will 55 yards cost at 9*s.* per yard?

$$\begin{array}{r}
 55 \text{ at } 1 \text{ shilling} = £2..15 \\
 \quad \quad \quad \underline{\quad 9 \quad} \\
 \hline
 £24..15 \text{ Ans.}
 \end{array}$$

What will 71 gallons come to at 11*s.* per gallon?

$$\begin{array}{r}
 71 \text{ at } 1 \text{ shilling} = £3..11 \\
 \quad \quad \quad \underline{\quad 11 \quad} \\
 \hline
 £39.. \quad 1 \text{ Ans.}
 \end{array}$$

What will 89 yards come to at 12*s.* per yard?

$$\begin{array}{r}
 89 \text{ at } 1 \text{ s.} = £4.. \quad 9 \\
 \quad \quad \quad \underline{\quad 12 \quad} \\
 \hline
 £53.. \quad 8 \text{ Ans.}
 \end{array}$$

This and others of a similar nature can be done by another method, which shall be explained as we proceed.

What will 98 gallons come to at 11*s.* per gallon?

$$\begin{array}{r}
 £4..18 \\
 \quad \quad \quad \underline{\quad 11 \quad} \\
 \hline
 £53..18 \text{ Ans.}
 \end{array}$$

In introducing fractional parts of a *yard*, *lb.* &c. in the quantity, when the price is shillings per yard, reckon the quarter as 3 pence, the half as 6 pence, and the 3 quarters as 9 pence, as the following examples will explain.

What will $47\frac{1}{4}$ yards cost at 5*s.* per yard?

$$\begin{array}{r}
 47\frac{1}{4} \text{ at } 1 \text{ shilling} = £2.. \quad 7.. \quad 3 \\
 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \underline{\quad 5 \quad} \\
 \hline
 £11..16..3 \text{ Ans.}
 \end{array}$$

What will $69\frac{1}{2}$ yards cost at 11s. per yard?

$$69\frac{1}{2} \text{ at 1 shilling} = \text{£}3.. 9.. 6$$

$$\begin{array}{r} 11 \\ \hline \text{£}38.. 4.. 6 \text{ Ans.} \end{array}$$

What will $85\frac{3}{4}$ gallons cost at 9s. per gallon?

$$\begin{array}{r} 85\frac{3}{4} \text{ at } 1 \text{ shilling} = £4.. 5.. 9 \\ \qquad \qquad \qquad \underline{\hspace{0.6cm}} 9 \\ \qquad \qquad \qquad £38..11.. 9 \textit{ Ans.} \end{array}$$

What will $111\frac{1}{4}$ lbs. come to at 8s. per lb.?

at 1 shilling = £5.11.. 3
8

£44.10.. 0 *Ans.*

What will $129\frac{1}{2}$ oz. come to at 12s. per oz.?

$$\begin{array}{r} \text{at 1 shilling} = \text{£}6.. 9.. 6 \\ \phantom{\text{at 1 shilling} = \text{£}6.. 9.. 6} \phantom{\text{£}6.. 9.. 6} 12 \\ \hline \text{£}77..14.. 0 \text{ Ans.} \end{array}$$

What will $185\frac{3}{4}$ *st.* come to at 7*s.* per *st.*?

[illegible]

What will $365\frac{1}{8}$ *lbs.* come to at 13*s.* per *lb.*?

$$\begin{array}{r} 365\frac{1}{2} \text{ at 1 shilling} = \text{£}18.. 5.. 6 \\ \phantom{365\frac{1}{2} \text{ at 1 shilling} = \text{£}18..} 13 \\ \hline \text{£}237..11.. 6 \text{ Ans.} \end{array}$$

What will $540\frac{3}{4}$ yards cost, at 16*s.* per yard?

$$\begin{array}{r} \text{at 1 shilling} = £27.. 0.. 9 \\ \hline 16 \\ \hline £432..12.. 0 \text{ Ans.} \end{array}$$

What will $661\frac{1}{8}$ yards come to at 6s. per yard?

at 1 shilling = £33.. 1.. $1\frac{1}{2}$
6

£198.. 6.. 9 Ans.

$\frac{1}{8}$ of a yard at 1s.
per yard is $1\frac{1}{2}d$.

What will $664\frac{5}{8}$ gallons come to at 7s. per gallon?

at 1 shilling = £33.. 4.. $7\frac{1}{2}$

$$\begin{array}{r} 7 \\ \hline £232..12.. 4\frac{1}{2} \text{ Ans.} \end{array}$$

What will $722\frac{7}{8}$ yards come to at 8s. per yard?

at 1 shilling = £36.. 2.. $10\frac{1}{2}$

$$\begin{array}{r} 8 \\ \hline £289.. 3.. 0 \text{ Ans.} \end{array}$$

What will 80 yards come to at 4s. 3d. per yard?

80 at 1 shilling = £4

$$\begin{array}{r} 4\frac{1}{4} \\ \hline £17 \text{ Ans.} \end{array}$$

Here 3d. being the $\frac{1}{4}$ of a shilling, the quarter of £4. what it comes to at 3d. is added when multiplying by the price.

What will 100 gallons come to at 5s. 6d. per gallon?

100 at 1 shilling = £5

$$\begin{array}{r} 5\frac{1}{2} \\ \hline £27..10 \text{ Ans.} \end{array}$$

What will 120 lbs. come to at 6s. 6d. per lb.?

120 at 1 shilling = £6

$$\begin{array}{r} 6\frac{1}{2} \\ \hline £39 \text{ Ans.} \end{array}$$

What will 140 yards cost at 11s. 6d. per yard?

at 1 hilling = £7

$$\begin{array}{r} 11\frac{1}{2} \\ \hline £80..10 \text{ Ans.} \end{array}$$

What will 160 oz. come to at 5s. 3d. per oz.?

at 1 shilling = £8

$$\begin{array}{r} 5\frac{1}{4} \\ \hline £42 \text{ Ans.} \end{array}$$

What will 180 lbs. cost at 12s. 9d. per lb.?

at 1s. = £9

$$\begin{array}{r} 12\frac{3}{4} \\ \hline £114..15 \text{ Ans.} \end{array}$$

Here 9d. being the 3 quarters of a shilling, £6..15s. is added in, being the 3 quarters of what it comes to at 1 shilling.

What will 200 gallons come to at 4s. 4d. per gallon?

at 1s. = £10

$4\frac{1}{2}$

£43.. 6.. 8 Ans.

Here 4d. being the third of a shilling, the third of £10. is added in.

What will 220 gallons come to at 11s. 3d. per gallon?

at 1 shilling = £11.. 0

$11\frac{1}{4}$

£123..15 Ans.

What will 240 yards come to at 11s. 9d. per yard?

240 at 1 shilling = £12

$11\frac{3}{4}$

£141 Ans.

What will $44\frac{1}{2}$ yards come to at 8s. 6d. per yard?

at 1 shilling = £2.. 4.. 6

$8\frac{1}{2}$

£18..18.. 3 Ans.

£1..2..3. to bring in.

What will $69\frac{3}{4}$ yards cost at 5s. 6d. per yard?

at 1 shilling = £3.. 9.. 9

$5\frac{1}{2}$

£19..3.. $7\frac{1}{2}$ Ans.

£1..14..10 $\frac{1}{2}$. to bring in.

What will $88\frac{1}{4}$ yards cost at 11s. 3d. per yard?

at 1 shilling = £4.. 8.. 3

$11\frac{1}{4}$

£49..12.. $9\frac{3}{4}$ Ans.

£1..2..0 $\frac{3}{4}$. to bring in.

What will $91\frac{1}{2}$ yards cost at 7s. 9d. per yard?

at 1 shilling = £4..11.. 6

£3..8..7 $\frac{1}{2}$. to bring in.

£35.. 9.. $1\frac{1}{2}$ Ans.

What will $125\frac{3}{4}$ gallons cost at 11s. 4d. per gallon?

at 1s. = £6.. 5.. 9

$11\frac{1}{2}$

£71.. 5.. 2 Ans.

£2..1..11. to bring in.

What will 44 yards cost at 4s. 1d. per yard?

44 at 1s. = £2.. 4

4.. 1

£8..19.. 8 Ans.

Here 44 yards at 1d.
being 3s. 8d. is brought
in one line.

What will 66 lbs. come to at 5s. 1d. per lb.?

at 1s. = £3.. 6

5.. 1

£16..15.. 6 Ans.

5s. 6d. to bring in,
being the amount
at 1 penny.

What will 90 oz. come to at 6s. 2d. per oz.?

at 1s. = £4..10

6.. 2

£27..15.. 0 Ans.

90 at 2d. being 15s.
to bring in.

What will 102 gallons come to at 7s. 2d. per gallon?

at 1 shilling = £5.. 2

7.. 2

£36..11.. 0 Ans.

102 at 2d. being 17s.
to bring in.

What will $112\frac{1}{2}$ yards cost at 9s. 2d. per yard?

at 1s. = £5..12.. 6

9.. 2

£51..11.. 3 Ans.

18s. 9d. to bring in.

What will $126\frac{1}{4}$ gallons cost at 12s. 1d. per gallon?

at 1 shilling = £6 . 6.. 3

12.. 1

£76.. 5.. $6\frac{1}{4}$ Ans.

10s. $6\frac{1}{4}$ d. to bring in.

What will 48 yards cost at 5s. 5d. per yard?

at 1s. = £2.. 8

5

£13.. 0 Ans.

4s. at 1 penny.

5

£1 at 5 pence.

*Such as the above may be done by another method,
which shall be explained as we proceed.*

What will 72 yards cost at 7s. 7d. per yard?

at 1s. = £3..12

7

£27.. 6 Ans.

6s. at 1d.

7

£2.. 2 to bring in.

What will 84 gallons cost at 9s. 5d. per gallon?

at 1s. = £4.. 4

7s. at 1d.

9
£39..11 Ans.

5
£1..15 to bring in.

What will 96 oz. cost at 7s. 10d. per oz.?

at 1s. = £4..16

8s. at 1d.

7
£37..12 Ans.

10
£4.. 0 to bring in.

What will 108 lbs. cost at 9s. 5½d. per lb.?

at 1s. = £5.. 8

9s. at 1d.

9
£51.. 1.. 6 Ans.

5½
£2.. 9.. 6 to bring in.

What will 120 gallons come to at 11s. 7¾d. per gallon?

at 1s. = £6

10s. at 1d.

11
£69..17.. 6 Ans.

7¾
£3..17..6 to bring in.

What will 144 yards cost at 13s. 10¾d. per yard?

at 1s. = £7.. 4

12s. at 1d.

13
£100.. 1 Ans.

10¾
£6.. 9.. 0 to bring in.

What will 150½ gallons come to at 5s. 5d. per gallon?

at 1s. = £7..10.. 6

12s. 6½d. at 1d.

5
Ans. £40..15.. 2½

5
£3.. 2.. 8½ to bring in.

What is the price of 140½ gallons at 17s. 1d. per gallon?

at 1s. = £7.. 0.. 6

11s. 8½d. to bring in.

17 1
£120.. 0.. 2½ Ans.

What will 80 yards come to at 14s. per yard?

80 at 1s. = £4.

£56 Ans.

In this and the following Sums a great many figures may be saved, by multiplying the Shillings of the price by the number of £. that the quantity amount to at 1s. which brings out the Answer in £.

What will 120 yards come to at 23s. per yard?

$$\begin{array}{r} 120 \text{ at } 1s. = £6 \\ \underline{£138} \text{ Ans.} \end{array}$$

What will 140 yards come to at 27s. per yard?

$$\begin{array}{r} 140 \text{ at } 1s. = £7 \\ \underline{£189} \text{ Ans.} \end{array}$$

What will 160 gallons come to at 33s. 6d. per gallon?

$$\begin{array}{r} 160 \text{ at } 1s. = £8 \\ \underline{£268} \text{ Ans.} \end{array}$$

In this question 6d. has been introduced, for which £4. is added in, because 160 at 6d. amounts to £4.

What will 180 yards come to at 37s. 3d. per yard?

$$\begin{array}{r} 37s. \ 3d. \\ 180 \text{ at } 1s. = £9 \\ \underline{£335.. \ 5} \text{ Ans.} \end{array} \quad \begin{array}{l} £2..5. \text{ the } \frac{1}{4} \text{ of } £9. \\ \text{to bring in.} \end{array}$$

What will 200 yards come to at 39s. 4d. per yard?

$$\begin{array}{r} 39s. \ 4d. \\ 200 \text{ at } 1s. = £10 \\ \underline{£393.. \ 6.. \ 8} \text{ Ans.} \end{array} \quad \begin{array}{l} £3..6..8. \text{ the } \frac{1}{3} \text{ of} \\ £10. \text{ to bring in.} \end{array}$$

When the price is any even number of Shillings—
RULE. Multiply the quantity by half the Shillings, double the outside or unit figure for Shillings, and let the other stand for £. which will give the Answer required.

EXAMPLES.

WHAT would 123 yards cost at 12s. per yard?

$$\begin{array}{r} 123 \\ 6 \text{ equal to half of } 12. \\ \underline{£73..16} \text{ Ans.} \end{array}$$

The cause of this Rule is, that instead of multiplying by the number of Shillings, and dividing by 20 (which is the usual way) you multiply by half the number of shillings, and divide by 10, which is in fact done by the preceding and following operations. It becomes more advantageous when the price gets above 12s.

Suppose 147 yards at 14s. per yard.

$$\begin{array}{r} 147 \\ 7 = \frac{1}{2} \text{ of } 14. \\ \hline \text{£}102..18 \text{ Ans.} \end{array}$$

What will 347 yards come to at 16s. per yard?

$$\begin{array}{r} 347 \\ 8 \\ \hline \text{£}277..12 \text{ Ans.} \end{array}$$

Here the $\frac{1}{2}$ of 16 is 8, which being placed under the 347, say 8 times 7 are 56, double the 6, which makes 12, put it down for shillings and carry 5; then 8 times 4 are 32, and 5 to carry are 37, put down 7 and carry 3; then 8 times 3 are 24, and 3 are 27, make £277. 12s.

Should the price not be even, multiply $\frac{1}{2}$ the quantity by all the shillings, and double the unit figure as before.

$$\begin{array}{r} \text{as } 342 \text{ at } 17s. \\ 171 \\ 17 \\ \hline \text{£}290..14 \text{ Ans.} \end{array}$$

Or, multiply 342 by 8, doubling the unit figure, which gives the price at 16s.; then for 1s. per yard difference, add £8. 11s. the amount at 1s.

thus, 342

or, 156 at 24s.

$$\begin{array}{r} 8 \\ \hline 273..12 \text{ at } 16s. \\ 17.. 2 \text{ at } 1s. \\ \hline \text{£}290..14 \text{ Ans.} \end{array}$$

$$\begin{array}{r} 156 \\ 12 \\ \hline \text{£}187..4 \text{ Ans.} \end{array}$$

Another method, by which may be found the amount of many articles in a short and simple manner, as follows.—**RULE.** Consider the pence in the price of one Article as shillings, by which you have the price of twelve Articles, which being multiplied by the number of dozens in the quantity, gives the total amount.

DEMONSTRATION.

When the pence in the price of one Article is converted into shillings, it is clear you then have the amount of twelve Articles; that being multiplied by the number of twelves in the entire quantity, must give the total amount, and save much time, figures and trouble, besides giving the result with the most perfect accuracy.

EXAMPLES.

WHAT will 72 come to at 3*s.* 5*d.* each?

3*s.* 5*d.* = 41 pence; as shillings = £2.. 1 the price of
6 one dozen.

£12.. 6 Ans.

It is multiplied by 6, because there are 6 doz. in 72.

What will 84 come to at 12*s.* 10*d.* each?

12*s.* 10*d.* = 154 pence; as shillings = £7..14 for 1 doz.

7
£53..18 Ans.

What will 108 come to at 9*s.* 5½*d.* each?

9*s.* 5½*d.* = 113½ pence; as shillings = £5..13.. 6 for 1 doz.

9
£51.. 1.. 6 Ans.

What will 126 come to at 15*s.* 8¾*d.* each?

15*s.* 8¾*d.* = 188¾*d.*; as shillings = £9.. 8.. 9

10½
£99.. 1..10½ Ans.

Here £9..8..9. the price of one dozen, is multiplied by 10½, because 126 are equal to 10½ dozen.

What will 147 gallons come to at 17*s.* 7¼*d.* per gallon?

17*s.* 7¼*d.* = 211¼ pence; as shillings = £10..11.. 3

12¼
Ans. £129.. 7.. 9¾

What will 25 hats be worth at 3s. 7d. each?

$$3s. 7d. = 43d.; \text{ as shillings} = £2.. 3 \text{ the price of 1 doz.}$$

$$\begin{array}{r} 2 \quad 3s. 7d. \text{ to take in.} \\ \hline £4.. 9.. 7 \text{ Ans.} \end{array}$$

Note, The 3s. 7d. taken in when multiplying, is for the one difference between 24 (the quantity found when £2. 3s is multiplied by 2) and *the desired quantity*, 25.

If the calculator prefer it, the overplus, after multiplying by the proper figure, may be added. Thus:

Suppose 62 yards of cloth at 5s. 7d. per yard.

$$5s. 7d. = 67d.; \text{ as shillings} = £3.. 7$$

$$\begin{array}{r} 5 \text{ dozen, giving the} \\ \hline £16.. 15 \text{ price of 60.} \\ 11.. 2 \text{ The 2 deficient at} \\ \hline \text{Ans. } £17.. 6.. 2 \text{ 5s. 7d. each to add,} \\ \text{being 11s. 2d.} \end{array}$$

What will a chest of tea, containing 85 lbs., cost at 4s. 2½d. per lb.?

$$4s. 2\frac{1}{2}d. = 50\frac{1}{2}d.; \text{ as shillings} = £2.. 10.. 6 \text{ take in for 1 lb.}$$

$$\begin{array}{r} 7 \quad 4s. 2\frac{1}{2}d. \text{ when} \\ \hline \text{Ans. } £17.. 17.. 8\frac{1}{2} \text{ multiplying} \\ \text{by 7.} \end{array}$$

What will 96½ lbs. of tea come to at 7s. 6¾d. per lb.?

$$7s. 6\frac{3}{4}d. = 90\frac{3}{4}d.; \text{ as shill.} = £4.. 10.. 9 \text{ 3s. } 9\frac{3}{8}d. \text{ to take}$$

$$\begin{array}{r} 8 \text{ in for the } \frac{1}{2} \text{ lb.} \\ \hline \text{Ans. } £36.. 9.. 9\frac{3}{8} \text{ above the 8 doz.} \\ \text{lbs.} \end{array}$$

If the quantity be under a certain number of dozens adopt the same system, observing to subtract the overplus. Thus:

Suppose 71 yards of cloth at 7s. 10¼d. per yard.

$$7s. 10\frac{1}{4}d. = 94\frac{1}{4}d.; \text{ as shill.} = £4.. 14.. 3$$

$$\begin{array}{r} 6 \text{ amount of 72.} \\ \hline 28.. 5.. 6 \\ 7.. 10\frac{1}{4} \text{ deduct for 1 yd.} \\ \hline \text{Ans. } £27.. 17.. 7\frac{3}{4} \text{ the overplus.} \end{array}$$

What will 142 yards come to at 11s. $2\frac{1}{8}d.$ per yard?

11s. $2\frac{1}{8}d.$ = $134\frac{1}{8}d.$ = £6..14.. $1\frac{1}{2}$ price of 12 yards.

$$\begin{array}{r}
 12 \\
 \hline
 80.. 9.. 6 \text{ price of 144; too much} \\
 1.. 2.. 4\frac{1}{4} \text{ by 2 to deduct} = £1..2.. \\
 \hline
 \text{Ans. } £79.. 7.. 1\frac{3}{4} 4\frac{1}{4}.
 \end{array}$$

What will 168 gallons of rum come to at 11s. $8\frac{3}{8}d.$ per gallon?

11s. $8\frac{3}{8}d.$ = $140\frac{3}{8}s.$ or £7.. 0.. $4\frac{1}{2}$

$$\begin{array}{r}
 14 \\
 \hline
 £98.. 5.. 3 \text{ Ans.}
 \end{array}$$

The simplicity, accuracy and expedition of the foregoing, does not stand in need of comment, its practical utility being perfectly conspicuous.

RULE for reducing *cwts. qrs. and lbs.* to *lbs.*.—First place down the number of *cwts.*, to the right of them put the number of *lbs.* contained in the *qrs.* and *lbs.*, then add 12 *lbs.* for each *cwt.* and you will have the number of *lbs.* in the whole.

Should the price per *lb.* be pence, consider them as pence; if shillings, consider them as shillings, as fully explained in the following

EXAMPLES.

WHAT will 6 *cwt.* 1 *qr.* 20 *lbs.* cost at 5*d.* per *lb.*?

$$\begin{array}{r}
 648 \\
 72 \\
 \hline
 \end{array}$$

720 *lbs.* as pence = 60*s.* or £3. at 1*d.* per *lb.*?

$$\begin{array}{r}
 5 \\
 \hline
 £15 \text{ Ans.}
 \end{array}$$

DEMONSTRATION.

The 6 to the left is the 6 *cwt.*; the 48 after it is the 28 *lbs.* in the *qr.* and the 20 *lbs.*; the placing of the 48 (or any two figures) after the preceding figure, is well known to convert them into numeral hundreds, thus, (100); but as each *cwt.* contains 112 *lbs.*, it is clear that there are 12 *lbs.* deficient for each *cwt.*; hence the necessity for adding 12 *lbs.* for each *cwt.*

Having discovered the number of *lbs.* in any given

number of *cwts. qrs. and lbs.*, which is done by the foregoing rule and example, you then proceed to find what the article amounts to, at any given *pence*, by the First General Rule, page 34: and at any given *shillings*, by the Second General Rule, page 43: which it will be necessary for any person studying this Book to become well acquainted with.

What will 7 *cwt. 2 qrs. 0 lbs.* cost at 7*d.* per *lb.*?

$$\begin{array}{r}
 756 \\
 84 \\
 \hline
 12 \overline{)840} \text{ lbs. considered as pence.} \\
 70\text{s.} = \text{£}3..10. \text{ at } 1\text{d. per lb.} \\
 \quad \quad \quad 7 \\
 \hline
 \text{£}24..10 \text{ Ans.}
 \end{array}$$

What will 8 *cwt. 2 qrs. 8 lbs.* come to at $5\frac{3}{4}$ *d.* per *lb.*?

$$\begin{array}{r}
 864 \\
 96 \\
 \hline
 12 \overline{)960} \text{ lbs. as pence.} \\
 80\text{s.} = \text{£}4. \text{ at } 1\text{d. per lb.} \\
 \quad \quad \quad 5\frac{3}{4} \\
 \hline
 \text{£}23 \text{ Ans.}
 \end{array}$$

The same example by Rule of Three.

<i>lb.</i>	<i>d.</i>	<i>cwt. qrs. lbs.</i>
1	: $5\frac{3}{4}$	: : 8.. 2.. 8
	4	4
farthings	<u>23</u>	<u>34</u>
		28
		<u>280</u>
		68
		<u>960</u> <i>lbs.</i>
		23
		<u>2880</u>
		1920
		<u>4)22080</u> as farthings.
		12)5520 as pence.
		2|0)46|0 as shillings.
		<u>£23</u> Ans.

What will 9 *cwt.* 2 *qrs.* 16 *lbs.* cost at $6\frac{1}{2}d.$ per *lb.*?

$$\begin{array}{r}
 972 \\
 108 \\
 \hline
 12)1080 \quad \text{£. s.} \\
 90s. = 4..10 \text{ at } 1d. \text{ per } lb. \\
 \quad \quad \quad 6\frac{1}{2} \\
 \hline
 \text{£}29.. 5 \text{ Ans.}
 \end{array}$$

What will 10 *cwt.* 3 *qrs.* 8 *lbs.* come to at 8*d.* per *lb.*?

$$\begin{array}{r}
 1092 \\
 120 \\
 \hline
 12)1212 \quad \text{£. s.} \\
 101s. = 5.. 1 \text{ at } 1d. \text{ per } lb. \\
 \quad \quad \quad 8 \\
 \hline
 \text{£}40.. 8 \text{ Ans.}
 \end{array}$$

What is the price of 11 *cwt.* 3 *qrs.* 4 *lbs.* at $9\frac{1}{2}d.$ per *lb.*?

$$\begin{array}{r}
 1188 \\
 132 \\
 \hline
 12)1320 \quad \text{£. s.} \\
 110s. = 5..10 \text{ at } 1d. \\
 \quad \quad \quad 9\frac{1}{2} \quad \text{£}2..15. \text{ to bring in.} \\
 \hline
 \text{£}52.. 5 \text{ Ans.}
 \end{array}$$

What will 12 *cwt.* 3 *qrs.* 12 *lbs.* come to at $10\frac{1}{4}d.$ per *lb.*?

$$\begin{array}{r}
 1296 \\
 144 \quad \text{£.} \\
 \hline
 1440d. = 6 \text{ at } 1d. \\
 \quad \quad \quad 10\frac{1}{4} \\
 \hline
 \text{£}61..10 \text{ Ans.}
 \end{array}$$

What will 12 *cwt.* 3 *qrs.* 24 *lbs.* cost at $10\frac{1}{2}d.$ per *lb.*?

$$\begin{array}{r}
 1308 \\
 144 \\
 \hline
 12)1452 \quad \text{£. s.} \\
 121s. = 6.. 1 \text{ at } 1d. \text{ per } lb. \\
 \quad \quad \quad 10\frac{1}{2} \\
 \hline
 \text{£}63..10.. 6 \text{ Ans.}
 \end{array}$$

It must be observed, that when the *qrs.* and *lbs.* reduced to *lbs.* exceed 100, they must not be placed after the *cwts.* as heretofore, but added in, saying 3 *qrs.* and 24 *lbs.* make 108, and 12 hundred are equal to 1308.

What will 15 *cwt.* 0 *qrs.* 0 *lbs.* cost at $10\frac{3}{4}d.$ per *lb.*?

$$\begin{array}{r}
 1500 \\
 180 \\
 \hline
 12)1680 \quad \text{£.} \\
 140s. = 7 \\
 10\frac{3}{4} \\
 \hline
 \text{£}75.. 5 \text{ Ans.}
 \end{array}$$

When there are no *qrs.* or *lbs.* two ciphers must be added, as the *cwt.* must be reckoned as numerical hundreds, as 100, to which 12 *lbs.* must be added to make it 112 *lbs.* the number of *lbs.* in a *cwt.*

What will 17 *cwt.* 0 *qrs.* 16 *lbs.* cost at $11\frac{3}{4}d.$ per *lb.*?

$$\begin{array}{r}
 1716 \\
 204 \\
 \hline
 12)1920 \quad \text{£.} \\
 160s. = 8 \text{ at } 1d. \\
 11\frac{3}{4} \\
 \hline
 \text{£}94 \text{ Ans.}
 \end{array}$$

It is hoped that the above examples, at *pence* per *lb.* will be found sufficient; we beg to introduce examples where the price is *shillings* per *lb.*

What will 18 *cwt.* 2 *qrs.* 12 *lbs.* come to at 2*s.* 6*d.* per *lb.*?

$$\begin{array}{r}
 1868 \\
 216 \\
 \hline
 2s. 6d. \text{ of a £. is } \frac{1}{8})2084 \\
 \hline
 \text{£}260..10 \text{ Ans.}
 \end{array}$$

When the price is an aliquot part of a £. as the above is one-eighth, nothing can be shorter than to take such part.

What will 1 t. 12 cwt. 3 qrs. 8 lbs. come to at 1s. 4d. per lb.?

$$\begin{array}{r}
 3292 \\
 384 \\
 \hline
 1s. 4d. \text{ of a } \pounds \text{ is } \frac{1}{13}) 3676 \\
 \hline
 \pounds 245.. 1.. 4 \text{ Ans.}
 \end{array}$$

What will 3 t. 6 cwt. 3 qrs. 14 lbs. cost at 1s. 8d. per lb.?

$$\begin{array}{r}
 6698 \\
 792 \\
 \hline
 1s. 8d. \text{ of a } \pounds \text{ is } \frac{1}{12}) 7490 \\
 \hline
 \pounds 624.. 3.. 4 \text{ Ans.}
 \end{array}$$

What will 5 t. 5 cwt. 3 qrs. 12 lbs. cost at 3s. per lb.?

$$\begin{array}{r}
 10596 \\
 1260 \quad \pounds \quad s. \\
 \hline
 11856s. = 592..16 \text{ at } 1s. \\
 3 \\
 \hline
 \pounds 1778.. 8 \text{ Ans.}
 \end{array}$$

Calculations of cwt.s. qrs. and lbs. at pounds, shillings and pence per cwt. may be done by the following methods.

What will 6 cwt. 2 qrs. come to at 66s. 8d. per cwt.?

$$\begin{array}{r}
 \pounds 3.. 6.. 8 \text{ price of 1 cwt.} \\
 6\frac{1}{2} \text{ cwt.} \quad \pounds 1..13..4. \text{ to bring in.} \\
 \hline
 \pounds 21..13.. 4 \text{ Ans.}
 \end{array}$$

Many calculations of cwt.s. qrs. and lbs. at pounds, shillings and pence per cwt. may be much shortened by finding the price per lb. as follows :

lb. cwt.				lb. cwt.				lb. cwt.				lb. cwt.			
d.	£.	s.	d.	d.	£.	s.	d.	d.	£.	s.	d.	d.	£.	s.	d.
$\frac{1}{4}$ is	0.	2.	4	$3\frac{1}{2}$ is	1.	12.	8	$6\frac{3}{4}$ is	3.	3.	0	10 is	4.	13.	4
$\frac{1}{2}$...	0.	4.	8	$3\frac{3}{4}$...	1.	15.	0	7 ...	3.	5.	4	$10\frac{1}{4}$...	4.	15.	8
$\frac{3}{4}$...	0.	7.	0	4 ...	1.	17.	4	$7\frac{1}{4}$...	3.	7.	8	$10\frac{1}{2}$...	4.	18.	0
1 ...	0.	9.	4	$4\frac{1}{4}$...	1.	19.	8	$7\frac{3}{4}$...	3.	10.	0	$10\frac{3}{4}$...	5.	0.	4
$1\frac{1}{4}$...	0.	11.	8	$4\frac{3}{8}$...	2.	2.	0	$7\frac{5}{8}$...	3.	12.	4	11 ...	5.	2.	8
$1\frac{1}{2}$...	0.	14.	0	$4\frac{5}{4}$...	2.	4.	4	8 ...	3.	14.	8	$11\frac{1}{4}$...	5.	5.	0
$1\frac{3}{4}$...	0.	16.	4	5 ...	2.	6.	8	$8\frac{1}{4}$...	3.	17.	0	$11\frac{3}{8}$...	5.	7.	4
2 ...	0.	18.	8	$5\frac{1}{4}$...	2.	9.	0	$8\frac{3}{8}$...	3.	19.	4	$11\frac{3}{4}$...	5.	9.	8
$2\frac{1}{4}$...	1.	1.	0	$5\frac{3}{8}$...	2.	11.	4	$8\frac{5}{4}$...	4.	1.	8	12 ...	5.	12.	0
$2\frac{1}{2}$...	1.	3.	4	$5\frac{5}{4}$...	2.	13.	8	9 ...	4.	4.	0	$12\frac{1}{4}$...	5.	14.	4
$2\frac{3}{4}$...	1.	5.	8	6 ...	2.	16.	0	$9\frac{1}{4}$...	4.	6.	4	$12\frac{1}{2}$...	5.	16.	8
3 ...	1.	8.	0	$6\frac{1}{4}$...	2.	18.	4	$9\frac{3}{8}$...	4.	8.	8	$12\frac{3}{4}$...	5.	19.	0
$3\frac{1}{4}$...	1.	10.	4	$6\frac{3}{2}$...	3.	0.	8	$9\frac{3}{4}$...	4.	11.	0	13 ...	6.	1.	4

What will 6 *cwts.* 3 *qrs.* 20 *lbs.* cost at £2..6..8. per *cwt.*?

$$\begin{array}{r}
 \text{£2.. 6.. 8 per cwt.} \\
 \hline
 \phantom{\text{£2.. 6.. 8}} 7 \\
 \hline
 16.. 6.. 8 \text{ price of 7 cwt.} \\
 \text{deduct} 3.. 4 \text{ price of 8 lbs.} \\
 \hline
 \text{£16.. 3.. 4 Ans.}
 \end{array}$$

When the *qrs.* and *lbs.* come near a *cwt.* calculate for the *cwts.* above your quantity, from which deduct for as many *lbs.* as may be deficient, as per

EXAMPLES.

What will 11 *cwt.* 3 *qrs.* 24 *lbs.* cost at 84*s.* per *cwt.*?

$$\begin{array}{r}
 \text{£4.. 4 per cwt.} \\
 \phantom{\text{£4.. 4}} 12 \\
 \hline
 50.. 8 \text{ price of 12 cwt.} \\
 3 \text{ deduct for 4 lbs.} \\
 \hline
 \text{£50.. 5 Ans.}
 \end{array}$$

It will be seen by the foregoing table that £4..4. per *cwt.* is 9*d.* per *lb.*

What will 9 *cwt.* 3 *qrs.* 27 *lbs.* come to at 93*s.* 4*d.* per *cwt.*?

$$\begin{array}{r}
 \text{£4..13.. 4 per cwt.} \\
 \phantom{\text{£4..13.. 4}} 10 \\
 \hline
 46..13.. 4 \\
 10 \text{ deduct for 1 lb.} \\
 \hline
 \text{£46..12.. 6 Ans.}
 \end{array}$$

£4..13..4 being 10*d.* per *lb.*, for 1 *lb.* deduct 10*d.*

What will 11 *cwt.* 3 *qrs.* 22 *lbs.* cost at 112*s.* per *cwt.*?

$$\begin{array}{r}
 \text{£5..12 per cwt.} \\
 \phantom{\text{£5..12}} 12 \\
 \hline
 \text{£67.. 4 for 12 cwt.} \\
 \phantom{\text{£67.. 4}} 6 \text{ deduct for 6 lbs.} \\
 \hline
 \text{£66..18 Ans.}
 \end{array}$$

112*s.* per *cwt.* is 1*s.* per *lb.*

What will 8 *cwt.* 2 *qrs.* come to at 110*s.* 6*d.* per *cwt.*?

$$\begin{array}{r}
 \text{£5..10.. 6} \\
 \phantom{\text{£5..10.. 6}} 8\frac{1}{2} \\
 \hline
 \text{£46..19.. 3 Ans.}
 \end{array}$$

£2..15..3. to bring in.

Cwts. qrs. and lbs. may be also done by the following much approved

RULE.

Multiply the *lbs.* by $2\frac{1}{7}$, and consider the product as pence ; multiply the *qrs.* by 5, and consider the product as shillings ; the *cwts.* you are to consider as £.

EXAMPLES.

WHAT will 73 *cwt.* 2 *qrs.* 7 *lbs.* cost at £6..1..8. per *cwt.*?

$$\begin{array}{r}
 \text{cwt. qrs. lbs.} \\
 73.. 2.. 7 \\
 \quad 5.. 2\frac{1}{7} \\
 \hline
 1s. 8d. = \frac{1}{12} 73..11.. 3 \text{ price of } 73.. 2.. 7 \text{ at } 1 \text{ per cwt.} \\
 \quad 6 \\
 \hline
 441.. 7.. 6 \\
 \quad 6.. 2.. 7\frac{1}{4} \text{ at } 1s. 8d. \text{ per cwt.} \\
 \hline
 \text{£}447..10.. 1\frac{1}{4} \text{ Ans.}
 \end{array}$$

DEMONSTRATION.

The cause of this Rule is evident ; as at £1. per *cwt.* a *qr.* must cost 5s. ; and a *lb.* the 28th. part of that, which is $2\frac{1}{7}d.$

What would 289 *cwt.* 3 *qrs.* 14 *lbs.* come to at £4..2..6. per *cwt.*?

$$\begin{array}{r}
 \text{cwt. qrs. lbs.} \\
 289.. 3..14 \\
 \quad 5.. 2\frac{1}{7} \\
 \hline
 2s. 6d. = \frac{1}{8} 289..17.. 6 \text{ price at } £1. \text{ per cwt.} \\
 \quad 4 \\
 \hline
 1159..10.. 0 \\
 \quad 36.. 4.. 8\frac{1}{4} \text{ at } 2s. 6d. \text{ per cwt.} \\
 \hline
 \text{£}1195..14.. 8\frac{1}{4} \text{ Ans.}
 \end{array}$$

By the above method, the trouble of taking parts for the *qrs.* and *lbs.* is entirely obviated.

In calculating *acres*, *roods* and *perches*, the same method may be adopted with advantage.

Consider the *acres* as *pounds*, multiply the *roods* by 5, the product consider as *shillings*, and the *perches* by $1\frac{1}{2}d$. gives the amount of the whole at £1. per *acre*, which multiply by the number of *pounds* per *acre*.

EXAMPLES.

WHAT will 60 *a.* 2 *r.* 8 *p.* come to at £3..10. per *acre*?

$$\begin{array}{r}
 a. \quad r. \quad p. \\
 60.. \quad 2.. \quad 8 \\
 \quad \quad 5.. \quad 1\frac{1}{2} \\
 \hline
 60..11.. \quad 0 \text{ at } \text{£}1. \text{ per } \text{acre}. \\
 \quad \quad 3\frac{1}{2} \\
 \hline
 \text{£}211..18.. \quad 6 \text{ Ans.} \quad \text{£}30..5..6. \text{ to bring in.}
 \end{array}$$

DEMONSTRATION.

As a perch is the 40th. part of a rood, and a rood at £1. per *acre* = 5*s.* multiply the perches by $1\frac{1}{2}d$. which gives in this case 1*s.*; then 5 times 2 are 10, and 1 to carry make 11*s.*; bring down 60 at £1. per *acre*, gives the total at £1. per *acre*, which being multiplied by $3\frac{1}{2}$ gives the answer.

What will 80 *a.* 3 *r.* 24 *p.* come to at £4..6..8. per *acre*?

$$\begin{array}{r}
 a. \quad r. \quad p. \\
 80.. \quad 3..24 \\
 \quad \quad 5.. \quad 1\frac{1}{2} \\
 \hline
 80..18.. \quad 0 \text{ at } \text{£}1. \\
 \quad \quad 4\frac{1}{3} \quad \text{£}26..19..4. \text{ to bring in.} \\
 \hline
 \text{£}350..11..4 \text{ Ans.}
 \end{array}$$

What will 196 *a.* 2 *r.* 36 *p.* come to at £5..19..10. per *acre*?

$$\begin{array}{r}
 a. \quad r. \quad p. \\
 196.. \quad 2..36 \\
 \quad \quad 5.. \quad 1\frac{1}{2} \\
 \hline
 196..14.. \quad 6 \text{ at } \text{£}1. \\
 \quad \quad 6 \\
 \hline
 1180.. \quad 7.. \quad 0 \text{ at } \text{£}6. \\
 \quad \quad 1..12.. \quad 9\frac{1}{2} \text{ deduct for } 2d. \\
 \hline
 \text{£}1178..14.. \quad 2\frac{1}{2} \text{ Ans.}
 \end{array}$$

In the foregoing operation, the price being nearly £6. per acre, it has been calculated at that price, which being 2*d.* per acre more than the price, the number of acres, &c. at 2*d.* have been deducted from it.

What will 575 *a.* 3 *r.* 26 *p.* come to at £7..1. per acre?

$$\begin{array}{r}
 \begin{array}{r}
 a. \quad r. \quad p. \\
 575.. \quad 3.. 26 \\
 \quad \quad 5.. \quad 1\frac{1}{2} \\
 \hline
 575..18.. \quad 3 \quad \text{at } £1. \text{ per acre.} \\
 \quad \quad \quad 7 \\
 \hline
 4031.. \quad 7.. \quad 9 \quad \text{at } £7. \\
 \quad \quad 28..15..10\frac{3}{4} \quad \text{at } 1s. \\
 \hline
 £4060.. \quad 3.. \quad 7\frac{3}{4} \quad \text{Ans.}
 \end{array}
 \end{array}$$

In treating on this description of calculations, Troy Weight, consisting of *lbs.* *oz.* *dwt.*s. and *grs.* I shall give Rules for solving in a similar manner by the following simple RULE.

Consider the *grs.* as *halfpence*, the *dwt.*s. as *shillings*, and the *ounces* as *pounds*, which gives the amount of the whole at £1. per *oz.*

EXAMPLES.

What will 11 *oz.* 8 *dwt.*s. 4 *grs.* cost at 3*s.* 4*d.* per ounce?

$$\begin{array}{r}
 \begin{array}{r}
 oz. dwt. grs. \\
 11.. \quad 8.. \quad 4 \\
 \quad \quad 1.. \quad 0\frac{1}{2} \\
 \hline
 3s. 4d. = £\frac{1}{6}). 11.. \quad 8.. \quad 2 \quad \text{at } £1. \text{ per ounce.} \\
 \hline
 £1..18.. \quad 0\frac{1}{3} \quad \text{Ans.}
 \end{array}
 \end{array}$$

DEMONSTRATION.

The 8 *dwt.*s. are considered as shillings, because there are 20 *dwt.*s. in the *oz.* and the *ounces* at £1. per *oz.* would give 1 shilling for each *dwt.*; the *grs.* are considered as $\frac{1}{2}$ *d.* each, on account of there being 24 *dwt.*s. to the *grain*, consequently each *grain* at $\frac{1}{2}$ *d.* each, and *dwt.* at 1*s.* each, will give the amount of the entire quantity at £1. per *oz.* which you must multiply or divide, as the price will require, and as the following examples more fully explain.

The £70..0..10. being the amount of the following quantity at £1. per oz. it is divided by 20, which gives the amount at 1 shilling per oz. and that is multiplied by $8\frac{1}{2}$, as the price is $8\frac{1}{2}$ shillings, or 8s. 6d. per oz.

What will 5 lb. 10 oz. 0 dwts. 20 grs. come to at 8s. 6d. per ounce ?

$$\begin{array}{r} \text{£. s. d.} \\ 70.. 0..10 \end{array}$$

$$\begin{array}{r} 3..10.. 0\frac{1}{2} \text{ at } 1s. \\ \underline{\hspace{1.5cm}} \\ 8\frac{1}{2} \\ \underline{\hspace{1.5cm}} \\ \text{£}29..15.. 4\frac{1}{4} \end{array}$$

147 oz. 16 dwts. and 18 grs. of gold at £3. per oz.

$$\begin{array}{r} \text{£}147..16.. 9 \text{ at } \text{£}1. \text{ per oz.} \\ \underline{\hspace{1.5cm}} \\ 3 \end{array}$$

$$\text{£}443. 10.. 3 \text{ Ans.}$$

181 oz. 15 dwts. 0 grs. at £4..0..1. per oz.

$$\text{£}181..15.. 0 \text{ at } \text{£}1. \text{ per oz.}$$

$$\begin{array}{r} 4 \qquad \qquad \qquad 15s. 1\frac{3}{4}d. \text{ at } 1d. \text{ to} \\ \underline{\hspace{1.5cm}} \qquad \qquad \qquad \text{bring in.} \\ \text{£}727..15.. 1\frac{3}{4} \text{ Ans.} \end{array}$$

AVERAGE CALCULATIONS.

The following average calculations have afforded the greatest satisfaction to all who have studied them for the singularly short method by which they have been worked, and the perfect accuracy of the answers.

EXAMPLES.

WHAT will 6 pieces of riband come to, each piece containing 36 yards, at the following prices, and what is the average price of each yard ?

1 piece at 4d. per yard.

1 5d.

1 6d.

1 7d.

1 8d.

1 12d.

6 pieces of 36 yards each,
at 1d. per yard = 18s.

$$\begin{array}{r} 7 \\ \text{total } \text{£}6..6 \end{array}$$

$$6)42d.$$

Ans. 7d. per yard average.

DEMONSTRATION.

In this and the following Calculations the prices are added together, which being divided by the number of prices, gives the average price per yard, the amount of the whole being made up at one penny, and multiplied by the average price, gives the total amount.

What will 100 lambs come to, purchased at the following prices?

	s.	d.
20 lambs at	4..	4 each.
20	4..	8
20	6..	0
20	8..	2
20	11..	10
	5)	35.. 0

Ans. 7s. the average price.

100 lambs at 1s. equal to £5.

7
£35 total.

500 yards of silk at the following prices: What is the total amount and average price of each yard?

100 yards at 5s. 3d. per yard.

100 5.. 9

100 7.. 0

100 8.. 11

100 15.. 7

5)42.. 6

s.8.. 6 average per yard.

What is the average price, and total amount of a case of 200 hats, at the following prices?

50 hats at 15s. 3½d. each.

50 15.. 8½

50 17.. 6

50 19.. 10

4)68.. 4

s.17.. 1 average.

200 at 1s. = £10.. 0 200 at 1d. = 16s. 8d.

17.. 1 to bring in.

£170..16.. 8

What is the average price, and total amount of 900 lambs, at the following prices?

300 lambs at	9s. 9d. each.
300	11.. 5
300	12.. 7
	<u>3)33.. 9</u>
	s.11.. 3 average.
900 at 1s. each =	£45.

$11\frac{1}{4}$
£506..5 total.

What will 12 pieces of riband come to, each piece averaging 48 yards, and what is the average price of each yard at the following prices?

2 pieces at	2 $\frac{1}{2}$ d. per yard.	
2	3 $\frac{1}{2}$	12 pieces, 48 yards each,
2	6 $\frac{1}{4}$	at 1d. per yard = £2.. 8.. 0
2	7 $\frac{3}{4}$	
2	9 $\frac{3}{4}$	
2	12 $\frac{1}{4}$	
	<u>6)42</u>	total £16..16.. 0
	7d. a yard average.	

A library containing 100 books at the following prices; required to find the average price of each book, and total amount.

10 books at	2s. 4 $\frac{1}{2}$ d. each.	
10	3.. 7 $\frac{1}{2}$	
10	4.. 4 $\frac{3}{4}$	
10	5.. 7 $\frac{1}{4}$	
10	6.. 7 $\frac{1}{4}$	
10	7.. 5 $\frac{1}{4}$	100 books at
10	8.. 6 $\frac{3}{4}$	1s. each = £5.. 0.. 0
10	9.. 4 $\frac{1}{4}$	
10	9.. 9 $\frac{3}{4}$	7.. 0 $\frac{1}{2}$
10	12.. 7 $\frac{3}{4}$	total £35.. 4.. 2
	<u>10)70.. 5</u>	
	s.7.. 0 $\frac{1}{2}$ average price of each book.	

Twenty-two casks of prunes, the average weight of each cask supposing to be 84 lbs., at the following

prices, required to find the average price of each *lb.* and the total amount.

2	casks at	$2\frac{3}{4}d.$	per <i>lb.</i>
2	.....	$4\frac{1}{2}$	
2	.....	$4\frac{3}{4}$	
2	.....	$6\frac{1}{2}$	
2	.....	$7\frac{1}{2}$	
2	.....	$7\frac{3}{4}$	
2	.....	$8\frac{1}{2}$	
2	.....	$9\frac{3}{4}$	
2	.....	$11\frac{1}{4}$	
2	.....	$11\frac{1}{2}$	
2	.....	$13\frac{1}{4}$	

11)88

8d. per *lb.* average.

22 casks.

7s. price of 1 cask at 1d. per *lb.*

154s. = £7..14.. 0 being the amount of all at 1d.
 Multip. by 8d. being the average price.

£61..12.. 0 total amount. *Ans.*

The above calculation takes more than five hundred figures to do it in the ordinary method, either by the Rule of Three, or by Practice, the few figures taken by this system are comparatively trifling.

110 gross of buttons at the following prices, required to find the average price of each gross, and the total amount.

10 gross at 1s. $5\frac{1}{2}d.$ per gross.

10 2.. $0\frac{1}{2}$

10 2.. $4\frac{3}{4}$

10 3.. $1\frac{1}{4}$

10 3.. $8\frac{1}{4}$

10 3.. $9\frac{3}{4}$

10 4.. $5\frac{1}{4}$

10 5.. $0\frac{3}{4}$

10 5.. $4\frac{3}{4}$

10 6.. $1\frac{1}{4}$

10 8.. 4

11)45..10

s.4.. 2 average per gross.

110 gross at 1s.

per gross = £5..10.. 0

4.. 2

Ans. £22..18.. 4

As the persons who may possess this book would probably be anxious to know how to work calculations of a similar nature to the foregoing, when the quantities are not equal, in order to meet their wishes, the Author subjoins a variety of calculations of the following description :

Twelve dozen pair of stockings purchased at the following prices, required to find the average price of each pair and the total amount.

	s.	d.		s.	d.
2 dozen pair at 2.. 3			per pair =	4..	6
3	2..	6	 =	7..	6
4	2..	9	 =	11..	0
2	3..	0	 =	6..	0
1	4..	0	 =	4..	0
				12)33..	0 price of 12 pair.
				s.2..	9 average per pair.
12 dozen pair at 1s. per pair =	£7..	4..	0		
				2 $\frac{3}{4}$	
				£19..16..	0 total amount.

By the foregoing calculation (and the following to be done in like manner) it will be seen that the different pairs of stockings stated in the question, have been calculated at the prices stated per pair, which being added up gives the amount of twelve pair, and being divided by 12, gives the amount of each pair, which averages 2s. 9d. Then 12 dozen being 144 at 1s. gives £7..4. and which, being multiplied by the average price, 2s. 9d. or 2 $\frac{3}{4}$ s. gives the total amount.

A library containing 100 Books at the following prices; required to know the average price, and total amount.

10 books at 2s. 6d. each =	25s. 0d.
15	3.. 6 = 52.. 6
20	4.. 6 = 90.. 0
30	5.. 6 = 165.. 0
20	6.. 6 = 130.. 0
5	7.. 6 = 37.. 6
100 books	100)500s. or £25. total.
5s. average price.	

22 cases of figs, each case averaging 3 *qrs.* 15 *lbs.* sold in lots as follow, and at the following prices: required to know the average price per *lb.* and total amount.

	<i>d.</i>	<i>d.</i>
2 cases at	$4\frac{1}{4}$ per <i>lb.</i>	$= 8\frac{1}{2}$
3	$5\frac{3}{4}$	$= 17\frac{1}{4}$
1	$6\frac{1}{4}$	$= 6\frac{1}{4}$
5	$7\frac{1}{4}$	$= 36\frac{1}{4}$
7	$8\frac{3}{4}$	$= 61\frac{1}{4}$
2	$9\frac{1}{2}$	$= 19$
2	$16\frac{1}{2}$	$= 33$
<u>22</u>		<u>22)181\frac{1}{2}</u>

$8\frac{1}{4}$ *d.* aver. price per *lb.*

22 cases of 3 *qrs.* 15 *lbs.* each = £9.. 1.. 6 at 1*d.*

$8\frac{1}{4}$ £2..5..4 $\frac{1}{2}$.

total amount £74..17.. 4 $\frac{1}{2}$ to bring in.

100 silk shawls, purchased in the following lots, and at the undermentioned prices:

10 shawls at	2 <i>s.</i> 6 <i>d.</i> each	= 25 <i>s.</i> 0 <i>d.</i>
12	3.. 8 $\frac{1}{4}$	= 44.. 3
15	4.. 6 $\frac{1}{2}$	= 68.. 1 $\frac{1}{2}$
20	5.. 3 $\frac{1}{2}$	= 105..10
15	6.. 4 $\frac{1}{2}$	= 95.. 7 $\frac{1}{2}$
10	7.. 9 $\frac{1}{2}$	= 77..11
12	8.. 5 $\frac{1}{2}$	= 101.. 6
6	9.. 5 $\frac{1}{2}$	= 56.. 9

100

100)575*s.* or £28..15. total.

$s.5.. 9$ average price.

A cargo of coals, containing 120 tons, as follow:

First cost per ton 8*s.* 0*d.*

Freight..... 9.. 0

Duty..... 2.. 0

$s.19.. 0$ per ton.

120 tons at 1*s.* per ton £6

£114 total amount.

A cargo of coals, containing 300 tons, as follow:

Prime cost per ton 7*s.* 6*d.*

Freight 8.. 6

Duty 1.. 6

$s.17.. 6$ per ton.

300 tons at 1*s.* = £15

£262..10 Ans.

A ship containing 1000 tons of coal, as follow :

Prime cost 8s. 6d.

Freight ... 8.. 1

Duty 2.. 6

s.19.. 1 per ton.

1000 tons at 1s. = £50.. 0

s.19.. 1

1000 at 1d. = £4..3..4.

total amount £954.. 3.. 4

to bring in.

5 puncheons of rum, as follow :

No. 1 containing 118 gallons.

2 119

3 120

4 121

5 122

600 gallons at 1s. = £30.

13

total £390

600 gallons.

Prime cost per gallon 4s.

Freight 1

Duty 8

stands in 13s. per gallon. *Ans.*

What will 6 puncheons of rum come to as follow ?

No. 1 containing 115 gallons.

2 117

3 118

4 121

5 124

6 130

725 gallons = £36.. 5

14

total £507..10

gallons 725 at 1s. each.

Prime cost per gallon 4s.

Freight 1

Duty 9

stands in 14s. per gallon. *Ans.*

What will 6 pipes of brandy come to as follow ?

No. 1 containing $112\frac{2}{10}$ gallons.

2 $114\frac{6}{10}$

3 $116\frac{6}{10}$

4 $118\frac{1}{10}$

5 $122\frac{2}{10}$

6 $137\frac{9}{10}$

$721\frac{1}{2}$ gallons at 1s. = £36.. 1.. 6

Prime cost per gallon 5s. 0d.

19 $\frac{1}{4}$

Freight 1.. 6

£694..8..10 $\frac{1}{2}$

Duty 12.. 9

stands in s.19.. 3 per gallon. *Ans.*

In measuring liquids in the king's stores, the broken parts of a gallon are divided into tenths, and which accounts for the tenths being introduced into the preceding and following Questions.

What will 10 butts of Geneva come to as follow ?

No. 1 containing $113\frac{1}{10}$ gallons.

2	.....	$114\frac{2}{10}$
3	.....	$115\frac{3}{10}$
4	.....	$116\frac{4}{10}$
5	.....	$117\frac{5}{10}$
6	.....	$118\frac{6}{10}$
7	.....	$119\frac{7}{10}$
8	.....	$120\frac{8}{10}$
9	.....	$121\frac{9}{10}$
10	.....	$122\frac{10}{10}$

$122\frac{10}{10}$ gall. = £60.. 2.. $2\frac{2}{5}$ at 1s.
15

Prime cost per gallon	3s. 6d.	<u>£901..13.. 0</u>
Freight	1.. 6	
Duty	10.. 0	

stands in s. 15.. 0 per gallon. *Ans.*

Note, Tenths are added up like other fractions, by adding up the Numerators, or figures above the line, and dividing their product by 10 the Denominator; the $\frac{1}{10}$ ths. make 32, divided by 10 goes 3 times and leaves 2, which are $\frac{2}{10}$ or $\frac{1}{5}$ of a gallon, at 1s. per gallon, is $\frac{1}{5}$ of a shilling or $2\frac{2}{5}$ pence.

INTEREST.

INTEREST is the profit allowed by the borrower to the lender, for the loan of any sum of money, for a determined space of time.

The Principal is the money lent, for which Interest is to be received.

The rate per Cent. is a certain sum agreed on between the borrower and the lender, to be paid for the use of every £100. of the Principal twelve months.

The interest may be found alone, or the amount, by adding the Interest and Principal together.

We shall here introduce two Rules for Interest at £5. *per Cent.* both of which have given the greatest satisfaction in all instances.

FIRST RULE.

Multiply the Principal by the Months, and the Product in Pounds Sterling taken as Pence, will be the Answer.

Or thus, the Interest of each Pound for one Month at 5 *per Cent.* is one penny, and so in proportion for any part of a Pound, therefore, find the Interest for one Month, and multiply it by the number of Months, the Product will be the Answer at 5 *per cent.*

EXAMPLES.

WHAT is the interest of £36. for three months?

£36 By first Rule.
3

£108 taken as pence = 9*s.* *Ans.*

Or thus, £36. for 1 month = 3*s.*
 multiplied by 3 months.
9*s.* *Ans.*

The second rule being the shortest, and both equally accurate, it will be found most advantageous to adopt it.

What is the interest of £48. for 4 months at 5 *per cent.*?

£48. for 1 month = 4*s.*
 multiplied by 4 months.
16*s.* *Ans.*

DEMONSTRATION,

To prove, by the Double Rule of Three, that the interest of each £. for one Month at £5. per Cent. is one Penny.

£. £. 1£.
 100 5 1
 mo. 12 1 mo.
1200

1
 5
 £5

240 No. of pence in a £.
1200)1200(1 penny.

It will be seen by those acquainted with the double Rule of Three, that this is the operation necessary to prove that the Interest of each £. for one Month at 5 per cent. is 1*d.* and having established that fact, the propriety of finding the Interest of money by either method given by us will appear clear and simple. Such as are not acquainted with the foregoing demonstration, may prove the truth of its being so, by this :

The Interest of £100. for 12 months at £5. per cent. is allowed by all who know any thing of the subject to be £5. therefore the Interest of £100. for 1 Month is the $\frac{1}{12}$ of £5. equal to 8*s.* 4*d.* consequently the Interest of £1. for a Month must be the $\frac{1}{100}$ of 8*s.* 4*d.* which is 1*d.*

What is the interest of £96. for 7 months at 5 per cent. ?

interest for 1 month 8*s.*

$$\begin{array}{r} 7 \\ \hline £2..16 \end{array} \text{ Ans.}$$

What is the interest of £108. for 2 months ?

interest for 1 month = 9*s.*

$$\begin{array}{r} 2 \\ \hline 18*s.* \end{array} \text{ Ans.}$$

Find the interest of £132. for 8 months.

£132. for 1 month = 11*s.*

$$\begin{array}{r} 8 \\ \hline £4.. 8 \end{array} \text{ Ans.}$$

Find the interest of £33. for 7 months.

£33. for 1 month = 2*s.* 9*d.*

$$\begin{array}{r} 7 \\ \hline s.19.. 3 \end{array} \text{ Ans.}$$

What is the interest of £65. for 11 months ?

£65. for 1 month = 5*s.* 5*d.*

$$\begin{array}{r} 11 \\ \hline £2..19.. 7 \end{array} \text{ Ans.}$$

What is the interest of £126. for 10 months?

10s. 6d. for 1 month.

$$\begin{array}{r} 10 \\ \hline \text{£}5.. 5.. 0 \text{ Ans.} \end{array}$$

What is the interest of £148. for 7 months?

12s. 4d. for 1 month.

$$\begin{array}{r} 7 \\ \hline \text{£}4.. 6.. 4 \text{ Ans.} \end{array}$$

What is the interest of £28..10. for three months?

2s. 4½d. for 1 month.

$$\begin{array}{r} 3 \\ \hline \text{s.}7.. 1\frac{1}{2} \text{ Ans.} \end{array}$$

Here £28. for 1 month is 28 pence, or 2s. 4d. and 10s. being half a pound is reckoned as ½ a penny, gives the interest for 1 month, which being multiplied by 3 (the number of months) gives 7s. 1½d. the answer required.

What is the interest of £122..10. for 5 months?

10s. 2½d. for 1 month.

$$\begin{array}{r} 5 \\ \hline \text{£}2..11..0\frac{1}{2} \text{ Ans.} \end{array}$$

Tell me the interest of £150..5. for 11 months.

12s. 6¼d. for 1 month.

$$\begin{array}{r} 11 \\ \hline \text{£}6..17..8\frac{3}{4} \text{ Ans.} \end{array}$$

Here the interest of 5s. for 1 month at 5 per cent. is ¼ of a penny.

What is the interest of £185..5. for 4 months?

15s. 5¼d. for 1 month.

$$\begin{array}{r} 4 \\ \hline \text{£}3.. 1.. 9 \text{ Ans.} \end{array}$$

What is the interest of £365..15. for 8 months?

£1..10..5¾ for 1 month.

$$\begin{array}{r} 8 \\ \hline \text{£}12.. 3..10 \text{ Ans.} \end{array}$$

Here for 15s. allow ¾d. being the 3 quarters of a £.

What is the interest of £420..15. for 10 months?

£1..15.. $0\frac{3}{4}$ for 1 month.

10

£17..10.. $7\frac{1}{2}$ Ans.

What is the interest of £526..2..6. for 7 months?

£2.. 3.. $10\frac{1}{8}$ for 1 month.

7

£15.. 6.. $10\frac{7}{8}$ Ans.

In this question 2s. 6d. being the $\frac{1}{8}$ of a £. the $\frac{1}{8}$ of a penny is allowed for it.

What is the interest of £125..7..6. for 2 months?

10s. $5\frac{3}{8}$ d. for 1 month.

2

£1.. 0.. $10\frac{3}{4}$ Ans.

As 7s. 6d. is $\frac{3}{8}$ of a £. $\frac{3}{8}$ of 1d. are allowed for it.

What is the interest of £147..12..6 for 9 months?

12s. $3\frac{5}{8}$ d. for 1 month.

9

£5..10.. $8\frac{5}{8}$ Ans.

12s. 6d. being $\frac{5}{8}$ of a pound, $\frac{5}{8}$ of a penny are allowed for it.

What is the interest of £1002..17..6. for 11 months?

£4.. 3.. $6\frac{7}{8}$ for 1 month.

11

£45..19.. $3\frac{5}{8}$ Ans.

17s. 6d. being $\frac{7}{8}$ of a £. $\frac{7}{8}$ of 1d. are allowed for it.

$\frac{7}{8}$ are multiplied like farthings or other Fractions, saying 11 times 7 are 77, and 8 into 77 goes 9 times (which is 9 pence) and leaves 5 which is $\frac{5}{8}$ of a penny.

Calculations in Interest can be brought sufficiently near for business by taking the nearest aliquot parts of a pound, that the shillings and pence in the question are of a pound, but if found necessary to bring the solutions to the greatest nicety, do them by the first Rule, considering the pounds as pence, and the pence in the shillings and pence as so many 240ths. as by the following

EXAMPLES.

WHAT is the interest of £68..7..11. for 8 months?

£68.. 7..11

8

£547.. 3.. 4 = £2..5..7 Ans.

The £547. as pence are equal to £2..5..7. and the 3s. 4d. being the $\frac{1}{6}$ of a pound is to be considered the $\frac{1}{6}$ of a penny, consequently the answer is £2..5..7 $\frac{1}{6}$. which in business would be considered as £2..5..7.

Or by Second Rule, 7s. 11d. being a little above 7s. 6d. which is $\frac{3}{8}$ of a pound, consider it the $\frac{3}{8}$ of a penny, thus,

$$\begin{array}{r} 5s. \ 8\frac{3}{8}d. \text{ for 1 month.} \\ 8 \\ \hline \text{£2.. 5.. 7 } \text{ Ans.} \end{array}$$

What is the interest of £98..10..6. for 7 months?

$$\begin{array}{r} \text{£98..10.. 6} \\ 7 \\ \hline \text{£689..13.. 6} = \text{£2..17..5}\frac{1}{2}. \text{ Ans.} \end{array}$$

The 689 pence = £2..17..5. and the 13s. 6d. contain 162 pence, and as there are 240 pence in a pound, the fraction is $\frac{1}{2}\frac{6}{40}$ fully $\frac{2}{3}$, or in business $\frac{1}{2}d$.

As it is generally known that £100. at interest for 12 months at 5 per cent. produces £5. we shall prove the accuracy of the Rule by the following

EXAMPLE.

WHAT is the interest of £100. for 12 months?

$$\begin{array}{r} \text{£100. for 1 month is } 8s. \ 4d. \\ 12 \\ \hline \text{£5.. 0.. 0 } \text{ Ans.} \end{array}$$

This sum has been worked on the same principle as the preceding, which clearly proves their accuracy.

Having explained Interest at £5. per cent. for months, we shall now introduce £5. per cent. for years.

As the interest of each pound for a month is 1d. the interest of £1. for a year will consequently be 1s.

Therefore multiply the principal by the years, and the product in pounds, taken as shillings, will be the answer, taking care to allow for the shillings and pence over such part of a shilling as they are of a pound.

Or, the interest of each pound for a year at £5. per cent. is 1s. and so in proportion for any part of a pound.

EXAMPLES.

WHAT is the interest of £30. for 3 years at £5. per cent.?

$$\begin{array}{r} \text{£}30 \\ \underline{3} \\ 90 \text{ as shillings} = \text{£}4..10. \text{ Ans.} \end{array}$$

Or, £30. for 1 year = £1..10
 multiply by $\underline{3}$ years.
 $\text{£}4..10 \text{ Ans.}$

What is the interest of £45. for 6 years at £5. per cent.?

$$\begin{array}{r} \text{£}2.. 5 \text{ for 1 year.} \\ \underline{6} \\ \text{£}13..10 \text{ Ans.} \end{array}$$

What is the interest of £126. for $3\frac{1}{2}$ years?

$$\begin{array}{r} \text{£}6.. 6 \text{ for 1 year.} \\ \underline{3\frac{1}{2}} \\ \text{£}22.. 1 \text{ Ans.} \end{array} \quad \text{£}3..3. \text{ to bring in.}$$

£126. for 1 year being £6..6. it is multiplied by $3\frac{1}{2}$, the time for which the interest is required.

What is the interest of £90. for 4 years and 3 months?

$$\begin{array}{r} \text{£}4..10 \text{ for 1 year.} \\ \underline{4\frac{1}{4}} \\ \text{£}19.. 2.. 6 \text{ Ans.} \end{array}$$

What is the interest of £128. for 5 years and 9 months?

$$\begin{array}{r} \text{£}6.. 8 \text{ for 1 year.} \\ \underline{5\frac{3}{4}} \\ \text{£}36..16 \text{ Ans.} \end{array}$$

What is the interest of £150..10. for 7 years?

$$\begin{array}{r} \text{£}7..10.. 6 \text{ for 1 year.} \\ \underline{7} \\ \text{£}52..13.. 6 \text{ Ans.} \end{array}$$

10s. being $\frac{1}{2}$ of a £. and the interest of £1. for a year being a shilling, 6d. is allowed for the interest of 10s. for a year.

What is the interest of £165..5. for 8 years?

£8.. 5.. 3 for 1 year.

8

£66.. 2.. 0 *Ans.*

What is the interest of £187..15. for 9 years?

£9.. 7.. 9 for 1 year.

9

£84.. 9.. 9 *Ans.*

What is the interest of £190..2..6. for 3 years?

£9..10.. $1\frac{1}{2}$ for 1 year. As 2s. 6d. is the $\frac{1}{8}$ of a £.
the $\frac{1}{8}$ of a shilling, $1\frac{1}{2}$ d. is
allowed.

3

£28..10.. $4\frac{1}{2}$ *Ans.*

What is the interest of £245..7..6 for 9 years and 4 months?

£12.. 5.. $4\frac{1}{2}$ for 1 year.

$9\frac{1}{2}$

£4..1.. $9\frac{1}{2}$. to bring in.

£114..10.. 2 *Ans.*

7s. 6d. being the $\frac{3}{8}$ of a £. the $\frac{3}{8}$ of a shilling = $4\frac{1}{2}$ d. is allowed, the interest for 1 year being £12..5.. $4\frac{1}{2}$. the $\frac{1}{3}$ of it is added in for 4 months, which is the third of a year.

Another very short and simple Rule for Interest at £5. per cent. for years, or years and months, is this:

RULE.—Consider the years as shillings and the months as pence, and take such part of the principal as those shillings and pence are of a £., which will be the Answer.

Required the interest of £347..10..6. for 5 years.

5 years as 5s. is of a £. $\frac{1}{4}$)347..10.. 6

£86..17.. $7\frac{1}{2}$ *Ans.*

What is the interest of £827..10..8. for 2 years and 6 months?

2 yrs. 6 m. = 2s. 6d. is $\frac{1}{8}$)827..10.. 8

£103.. 8..10 *Ans.*

What is the interest of £60. for 3 years and 4 months?

3 yrs. 4 m. = 3s. 4d. is $\frac{1}{6}$)60

£10 *Ans.*

What is the interest of £128..16..8. for 1 year and 3 months?

$$1 \text{ yr. } 3 \text{ m.} = 1s. 3d. \text{ of a } £. \text{ is } \frac{1}{16}) 128..16.. 8$$

$$£8.. 1.. 0\frac{1}{2} \text{ Ans.}$$

What is the interest of £750..15..7½. for 1 year and 4 months?

$$1 \text{ yr. } 4 \text{ m.} = 1s. 4d. \text{ of a } £. \text{ is } \frac{1}{15}) 750..15.. 7\frac{1}{2}$$

$$£50.. 1.. 0\frac{1}{2} \text{ Ans.}$$

What is the interest of £999..15..6 for 1 year and 8 months?

$$1 \text{ yr. } 8 \text{ m.} = 1s. 8d. \text{ is of a } £. \frac{1}{12}) 999..15.. 6$$

$$£83.. 6.. 3\frac{1}{2} \text{ Ans.}$$

What is the interest of £1795..12..6. for 6 years and 8 months?

$$6 \text{ yrs. } 8 \text{ m.} = 6s. 8d. \text{ of a } £. \text{ is } \frac{1}{3}) 1795..12.. 6$$

$$£598..10..10 \text{ Ans.}$$

What is the interest of £1840..12. for 7 years and 6 months?

5 yrs. at 5s. is $\frac{1}{4})$	1840..12	yrs. m.
2 yrs. 6 m. as 2s. 6d. is $\frac{1}{2})$	460.. 3	for 5 0
	230.. 1.. 6	for 2 6
	£690.. 4.. 6	for 7 6

DEMONSTRATION,

Of Interest for Years and Months at £5. per cent.

By the above examples it is evident that calculations of this description can be extended to any amount, and for any length of time; the accuracy of the Rule is clearly evinced by the circumstance of any sum being left at Simple Interest for 20 years, in which time the interest becomes as much as the principal; therefore by taking such part of the principal as the time is of 20 years, will give the Answer with the greatest degree of ease and accuracy.

£6. PER CENT.

As £6. per cent. is a most useful rate, being the legal interest in Ireland, Scotland, and other countries, we here introduce the shortest and most admired Rule for that rate per cent. that has ever been discovered, and is not only valuable as a Rule for 6 per cent., but facilitates the mode of calculating various other rates.

RULE.—Multiply the principal by the number of months, and the product in pounds, taken as shillings, after cutting off the unit figure, which is to be considered as pence, and as many fifths will be the Answer.

For 5s. add $\frac{1}{4}d.$

For 15s. add $\frac{3}{4}d.$

For 10s. add $\frac{1}{2}d.$

For 16s. 8d. and above, add 1d.

DEMONSTRATION of £6. per cent.

$$\begin{array}{rcl}
 \begin{array}{l} \text{£.} \\ \text{If 100} \\ \text{in 12 mo.} \\ \hline 1200 \end{array} & \begin{array}{c} \text{give} \\ \text{6} \end{array} & \begin{array}{l} \text{£.} \\ 1 \\ \text{1 mo.} \\ \hline 1 \\ 6 \\ \hline 6 \text{ £.} \\ 240d. \text{ in a £.} \end{array} \\
 & & \begin{array}{r} 1200 \overline{)1440} (1\frac{1}{5}d. \\ \underline{1200} \\ 240 \left\{ \frac{240}{1200} \right\} \frac{1}{5} \\ \dots \end{array}
 \end{array}$$

This is proved by the Double Rule of Three, as in the case of 5 per cent. But persons not acquainted with this Demonstration, can satisfy themselves by adding $\frac{1}{5}$ th. to the interest at 5 per cent. (which is the difference) and it will give one penny and the fifth of the same. But to return, if the interest of each pound for a month is $1\frac{1}{5}d.$ any principal, multiplied by what months soever, will be $1\frac{1}{5}d.$; the operation of reducing them to pounds, shillings and pence, is performed by dividing the product of the multiple by 200, which is done by cutting off the unit figure, which divides it by ten, and then considering the figures left as shillings, and reducing them to pounds and shillings, divides

again by 20, and dividing by both of which is equal to dividing by 200 in the first instance. The cause of dividing by 200 is, that 200 $1\frac{1}{2}d.$ are equal to a pound; it will be seen by the Rule that a proportionate allowance is made for any shillings and pence that may be produced, by multiplying together the principal and months.

The Authors are particularly anxious that those who possess their work, should make themselves well acquainted with 5 and 6 per cent., so as to perform the operations with facility, as by obtaining that advantage they can with little trouble, ascertain the interest of any sum for any length of time, and at any rate per cent.; all the other rates being founded on 5 and 6 per cent.; knowing how very important they are, more examples and explanations, &c. have been given on each of the foregoing methods than on any of the following, and which they trust will be allowed to be extremely simplified, and rendered perfectly easy of acquirement.

EXAMPLES.

WHAT is the interest of £30. for 3 months at £6. per cent.?

$$\begin{array}{r} 3 \\ 9 \overline{)0} = 9s. 0d. \text{ Ans.} \end{array}$$

Here the principal, £30. is multiplied by 3, which produces £90. of which the unit figure is cut off, leaving 9s. which is the Answer, the unit figure to be reckoned as pence.

What is the interest of £40. for 9 months at £6. per cent.?

$$\begin{array}{r} £40 \\ 9 \\ 36 \overline{)0} = £1..16. \text{ Ans.} \end{array}$$

What is the interest of £50. for 7 months?

$$\begin{array}{r} £50 \\ 7 \\ 35 \overline{)0} = £1..15. \text{ Ans.} \end{array}$$

What is the interest of £70. for 8 months?

$$\begin{array}{r} £70 \\ 8 \\ 56 \overline{)0} = £2..16. \text{ Ans.} \\ \text{D } 5 \end{array}$$

What is the interest of £95. for 8 months?

$$\begin{array}{r} \text{£}95 \\ 8 \\ \hline 76|0 = \text{£}3..16. \text{ Ans.} \end{array}$$

What is the interest of £73. for 7 months?

$$\begin{array}{r} \text{£}73 \\ 7 \\ \hline 51|1 = \text{£}2..11..1\frac{1}{5}. \text{ Ans.} \end{array}$$

Here the unit figure cut off is by the Rule considered as $1\frac{1}{5}d.$ which with 51s. give the Answer £2..11..1 $\frac{1}{5}$.

What is the interest of £87. for 6 months?

$$\begin{array}{r} \text{£}87 \\ 6 \\ \hline 52|2 = \text{£}2..12..2\frac{2}{5}. \text{ Ans.} \end{array}$$

What is the interest of £97. for 9 months?

$$\begin{array}{r} \text{£}97 \\ 9 \\ \hline 87|3 = \text{£}4..7..3\frac{3}{5}. \text{ Ans.} \end{array}$$

What is the interest of £108. for 8 months?

$$\begin{array}{r} \text{£}108 \\ 8 \\ \hline 86|4 = \text{£}4..6..4\frac{4}{5}. \text{ Ans.} \end{array}$$

Find the interest of £125. for 9 months?

$$\begin{array}{r} \text{£}125 \\ 9 \\ \hline 112|5 = \text{£}5..12..6. \text{ Ans.} \end{array}$$

Here the unit figure cut off is 5, which is to be considered as $5\frac{5}{5}d.$ and as $\frac{5}{5}$ are equal to 1d. the pence are 6, which with 112s. give £5..12..6.

What is the interest of £137. for 8 months?

$$\begin{array}{r} \text{£}137 \\ 8 \\ \hline 109|6 = \text{£}5..9..7\frac{1}{5}. \text{ Ans.} \end{array}$$

In this question the figure cut off is 6, which is $6\frac{6}{5}d.$ and as 5 fifths are 1d. 6 fifths are $1\frac{1}{5}d.$ with the 6d. is $7\frac{1}{5}d.$ and 109s. added give £5..9..7 $\frac{1}{5}$.

Find the interest of £146..6..8. for 9 months.

$$\begin{array}{r} \text{£}146.. 6.. 8 \\ 9 \\ \hline 131|7.. 0.. 0 = \text{£}6..11..8\frac{2}{5}. \text{ Ans.} \end{array}$$

There is 6s. 8d. in this question, which by adhering to the Rule must be multiplied, and the unit figure of the pounds cut off, which is $7\frac{7}{5}$ or $8\frac{2}{5}$.

What is the interest of £148..10. for 8 months?

£148..10

8

$118|8.. 0 = £5..18..9\frac{3}{5}$. *Ans.*

What is the interest of £207..13..4. for 9 months?

£207..13.. 4

9

$186|9.. 0.. 0 = £9..6..10\frac{4}{5}$. *Ans.*

The highest unit figure has now been arrived at, which is 9, that is 9d. and 9 fifts equal to $1\frac{4}{5}$ d. give $10\frac{4}{5}$ d.

What is the interest of £125..10. for 11 months?

£125..10

11

$138|0..10 = £6..18..0\frac{1}{2}$. *Ans.*

After multiplying the principal by 11 there are 10s. for which $\frac{1}{2}$ d. is allowed, which is sufficiently near for business, though in reality it may be reckoned as $\frac{5}{8}$.

What is the interest of £285..8..9. for 12 months?

£285.. 8.. 9

12

$342|5.. 5.. 0 = £17..2..6\frac{1}{4}$. *Ans.*

What is the interest of £290..1..3. for 12 months?

£290.. 1.. 3

12

$348|0..15 = £17..8..0\frac{3}{4}$ d. *Ans.*

The 348 are shillings, the cipher cut off is pence, and for the 15 shillings $\frac{3}{4}$ d. have been allowed, making the Answer £17..8..0 $\frac{3}{4}$.

What is the interest of £357..4..2. for 4 months?

£357.. 4.. 2

4

$142|8..16.. 8 = £7..2..10\frac{3}{5}$. *Ans.*

The 8 cut off is $8\frac{8}{5}$ or $9\frac{3}{5}$ with a penny allowed for the 16s. 8d. give $10\frac{3}{5}$.

What is the interest of £365..8..10. for 13 months?

$$\begin{array}{r} \text{£}365.. 8..10 \\ \quad \quad 13 \\ \hline 475|0..14..10 = \text{£}23..15..0\frac{3}{4}. \quad \text{Ans.} \end{array}$$

As any thing above 12s. 6d. is $\frac{3}{4}$, there need be no hesitation in allowing $\frac{3}{4}$ d. in this instance, although to simplify the method the Rule directs for 15s. add $\frac{3}{4}$ d.

What is the interest of £825..9..2. for 14 months?

$$\begin{array}{r} \text{£}825.. 9.. 2 \\ \quad \quad 14 \\ \hline 1155|6.. 8 . 4 = \text{£}57..15..7\frac{1}{2}. \quad \text{Ans.} \end{array}$$

Here the 6 cut off is $7\frac{1}{2}$, and the 8s. 4d. is a halfpenny, but as it is not $\frac{3}{4}$ d. put down a halfpenny.

Interest for years and months may be done in the same manner by reducing both into months, by the following

EXAMPLES.

WHAT is the interest of £70. for 1 year and 8 months?

$$\begin{array}{r} \text{£}70 \\ \quad 20 \text{ months} = 1 \text{ yr. } 8 \text{ m.} \\ \hline 140|0 = \text{£}7. \quad \text{Ans.} \end{array}$$

What is the interest of £85. for 2 years and 6 months?

$$\begin{array}{r} \text{£}85 \\ \quad 30 = 2 \text{ yrs. } 6 \text{ m.} \\ \hline 255|0 = \text{£}12..15. \quad \text{Ans.} \end{array}$$

What is the interest of £30. for 3 years and 4 months?

$$\begin{array}{r} \text{£}30 \\ \quad 40 \text{ months.} \\ \hline 120|0 = \text{£}6. \quad \text{Ans.} \end{array}$$

What is the interest of £147. for 4 yrs. and 2 months?

$$\begin{array}{r} \text{£}147 \\ \quad 50 \text{ months.} \\ \hline 735|0 = \text{£}36..15. \quad \text{Ans.} \end{array}$$

What is the interest of £289. for 10 years?

$$\begin{array}{r} \text{£}289 \\ \quad 120 \text{ months.} \\ \hline 3468|0 = \text{£}173..8. \quad \text{Ans.} \end{array}$$

What is the interest of £165. for 5 yrs. and 5 months?

$$\begin{array}{r} £165 \\ 65 \\ \hline 825 \\ 990 \\ \hline 1072 \overline{)5} = £53..12..6. \text{ Ans.} \end{array}$$

What is the interest of £187. for 8 years 6 months?

$$\begin{array}{r} £187 \\ 102 \\ \hline 1907 \overline{)4} = £95..7..4\frac{1}{2}. \text{ Ans.} \end{array}$$

Having given various examples at 6 per cent. which are not only simple and accurate in the extreme, but being so easy of division, can be made applicable to numerous other rates of Interest. We shall now give a Rule for $4\frac{1}{2}$ per cent.

RULE.—Calculate at 6 per cent. and deduct a quarter from that amount.

Or, multiply the principal by three quarters of the time, and proceed as in 6 per cent. when the months are even.

EXAMPLES.

WHAT is the interest of £30. for 3 months at $4\frac{1}{2}$ per cent.?

$$\begin{array}{r} £30 \\ 3 \quad 4) \\ \hline 9 \overline{)0} = 9s. 0d. \text{ at 6 per cent.} \\ 2.. 3 \\ \hline s.6.. 9d. \text{ at } 4\frac{1}{2} \text{ per cent. Ans.} \end{array}$$

Here we proceed as at 6 per cent. and having found the amount take off $\frac{1}{4}$, leaving $\frac{3}{4}$ of 6, which is $4\frac{1}{2}$, the answer.

What is the interest of £145. for 5 months?

$$\begin{array}{r} £145 \\ 5 \quad 4) \\ \hline 72 \overline{)5} = £3..12.. 6 \text{ at 6 per cent.} \\ 18.. 1\frac{1}{2} \text{ deduct.} \\ \hline £2..14.. 4\frac{1}{2} \text{ Ans.} \end{array}$$

What is the interest of £150..10..6. for 7 months ?

£150..10.. 6

$$\begin{array}{r} \underline{\hspace{1.5cm} 7 \hspace{1.5cm}} \quad 4) \\ 105|3..13.. \quad 6 = £5.. \quad 5.. \quad 4\frac{1}{4} \text{ at 6 per cent.} \\ \hspace{1.5cm} 1.. \quad 6.. \quad 4 \text{ deduct.} \\ \hline £3..19.. \quad 0\frac{1}{4} \text{ Ans.} \end{array}$$

Find the interest of £347..18..10. for 7 months.

£347..18..10

$$\begin{array}{r} \underline{\hspace{1.5cm} 7 \hspace{1.5cm}} \quad 4) \\ 243|5..11..10 = £12.. \quad 3.. \quad 6\frac{1}{2} \text{ at 6 per cent.} \\ \hspace{1.5cm} 3.. \quad 0..10\frac{1}{2} \text{ deduct.} \\ \hline £9.. \quad 2.. \quad 8 \text{ Ans.} \end{array}$$

11s. 10d. not being $\frac{3}{4}d.$ allow $\frac{1}{2}d.$ for it.

What is the interest of £420..11..7. for 11 months ?

£420..11.. 7

$$\begin{array}{r} \underline{\hspace{1.5cm} 11 \hspace{1.5cm}} \quad 4) \\ 462|6.. \quad 7.. \quad 5 = £23.. \quad 2.. \quad 7\frac{1}{2} \text{ at 6 per cent.} \\ \hspace{1.5cm} 5..15.. \quad 7\frac{3}{4} \text{ deduct.} \\ \hline £17.. \quad 6..11\frac{3}{4} \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months ?

£100

$\frac{1}{4}$ of £6. at 6 per cent.

12

1..10.. 0

120|0 = £6.

£4..10.. 0 *Proof.*

Calculations of Interest at $4\frac{1}{2}$ per cent. may be materially shortened, when three quarters of the time can be taken, as the following

EXAMPLES.

WHAT is the interest of £185..5. for 4 months at $4\frac{1}{2}$ per cent. ?

£185.. 5

3 = to $\frac{3}{4}$ of 4 months.

55|5..15 = £2..15..6 $\frac{3}{4}$. *Ans.*

What is the interest of £225..8..10 $\frac{1}{2}$. for 8 months ?

£225.. 8..10 $\frac{1}{2}$

6 = to $\frac{3}{4}$ of 8 months.

135|2..13.. 3 = £6..15..3. *Ans.*

In this instance the $2\frac{2}{5}$ and the allowance made for the 13s. 3d. give fully 3 pence.

What is the interest of £228..17..8 $\frac{1}{4}$. for 1 yr. 4 months?

$$\begin{array}{r} £228..17..8\frac{1}{4} \\ 12 = \frac{3}{4} \text{ of } 16 \text{ months.} \\ \hline 274|6..12..3 = £13..14..7\frac{3}{4}. \text{ Ans.} \end{array}$$

What is the interest of £380..1..4. for 1 year and 8 months?

$$\begin{array}{r} £380..1..4 \\ 15 = \frac{3}{4} \text{ of } 20 \text{ months.} \\ \hline 570|1..0..0 = £28..10..1\frac{1}{5}. \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months?

$$\begin{array}{r} £100 \\ 9 = \frac{3}{4} \text{ of } 12 \text{ months.} \\ \hline 90|0 = £4..10. \text{ Ans. and Proof.} \end{array}$$

RULE for Interest at 4 per cent.—Calculate at 6 per cent. and deduct $\frac{1}{3}$ from that amount.

Or, by taking $\frac{1}{3}$ from the number of months, and multiplying the principal by the remaining months, it then becomes 4 per cent. without the trouble of going into 6 per cent.

EXAMPLES.

WHAT is the interest of £55..3. for 5 months?

$$\begin{array}{r} £55..3 \\ 5 \\ \hline 27|5..15 = £1..7..6\frac{3}{4} \text{ at } 6 \text{ per cent.} \\ 9..2\frac{1}{4} \text{ deduct.} \\ \hline s.18..4\frac{1}{2} \text{ at } 4 \text{ per cent. Ans.} \end{array}$$

What is the interest of £126..10. for 7 months?

$$\begin{array}{r} £126..10 \\ 7 \\ \hline 88|5..10 = £4..8..6\frac{1}{2} \text{ at } 6 \text{ per cent.} \\ \text{deduct } \frac{1}{3} \text{ 1..9..6} \\ \hline £2..19..0\frac{1}{2} \text{ nearly. Ans.} \end{array}$$

What is the interest of £158..2..8 $\frac{1}{4}$. for 11 months?

$$\begin{array}{r}
 \text{£}158.. 2.. 8\frac{1}{4} \\
 \quad \quad \quad 11 \\
 \hline
 173 \overline{) 9.. 9.. 6\frac{3}{4}} = \text{£}8..13..11\frac{1}{4} \\
 \quad \quad \text{deduct } \frac{1}{3} 2..17..11\frac{3}{4} \\
 \hline
 \text{£}5..15..11\frac{1}{2} \quad \text{Ans.}
 \end{array}$$

The following will be much shortened by multiplying by $\frac{2}{3}$ of the time.

What is the interest of £286..9..2. for 3 months at 4 per cent.?

$$\begin{array}{r}
 \text{£}286.. 9.. 2 \\
 \quad \quad \quad 2 = \frac{2}{3} \text{ of 3 months.} \\
 \hline
 57 \overline{) 2..18.. 4} = \text{£}2..17..3\frac{1}{2}. \quad \text{Ans.}
 \end{array}$$

What is the interest of £320..17..6. for 6 months?

$$\begin{array}{r}
 \text{£}320..17.. 6 \\
 \quad \quad \quad 4 = \frac{2}{3} \text{ of 6 months.} \\
 \hline
 128 \overline{) 3..10.. 0} = \text{£}6..8..4\frac{1}{2}. \quad \text{Ans.}
 \end{array}$$

What is the interest of £427..18..9 $\frac{1}{4}$. for 9 months?

$$\begin{array}{r}
 \text{£}427..18.. 9\frac{1}{4} \\
 \quad \quad \quad 6 = \frac{2}{3} \text{ of 9 months.} \\
 \hline
 256 \overline{) 7..12.. 7\frac{1}{2}} = \text{£}12..16..9. \quad \text{Ans.}
 \end{array}$$

What is the interest of £583..0..8. for 15 months?

$$\begin{array}{r}
 \text{£}583.. 0.. 8 \\
 \quad \quad \quad 10 = \frac{2}{3} \text{ of 15 months.} \\
 \hline
 583 \overline{) 0.. 6.. 8} = \text{£}29..3..0\frac{1}{4}. \text{ or } \frac{2}{3}. \quad \text{Ans.}
 \end{array}$$

What is the interest of £580..19..8 $\frac{3}{4}$. for 1 year 6 months?

$$\begin{array}{r}
 \text{£}580..19.. 8\frac{3}{4} \\
 \quad \quad \quad 12 = \frac{2}{3} \text{ of 18 months.} \\
 \hline
 697 \overline{) 1..16.. 9} = \text{£}34..17..2\frac{1}{4}. \quad \text{Ans.}
 \end{array}$$

What is the interest of £100. for 12 months?

$$\begin{array}{r}
 \text{£}100 \\
 \quad \quad \quad 8 = \frac{2}{3} \text{ of 12 months.} \\
 \hline
 80 \overline{) 0} = \text{£}4. \quad \text{Ans.}
 \end{array}$$

RULE for Interest at $3\frac{1}{2}$ per cent.—Calculate at 6 per cent. and take half the amount when it becomes 3 per cent. to which amount add $\frac{1}{6}$. Or, by multiplying by half the number of months, it saves the trouble of going into 6 per cent.

EXAMPLES.

WHAT is the interest of £30. for 4 months?

$$\begin{array}{r} \text{£}30 \\ 2 \quad \frac{1}{2} \text{ of } 4 \text{ is } 2 \text{ months.} \\ \text{add } \frac{1}{6})\overline{60} \text{ at } 3 \text{ per cent.} \\ 1.. 0 \\ \hline s.7.. 0 \text{ at } 3\frac{1}{2} \text{ per cent.} \end{array}$$

What is the interest of £45. for 6 months?

$$\begin{array}{r} \text{£}45 \\ 3 \quad 6) \\ \hline 13\overline{)5} = 13s. 6d. \text{ at } 3 \text{ per cent.} \\ 2.. 3 \\ \hline s.15.. 9 \text{ at } 3\frac{1}{2} \text{ per cent.} \end{array}$$

What is the interest of £85. for 8 months?

$$\begin{array}{r} \text{£}85 \\ 4 \quad \frac{1}{2} \text{ of } 8 \text{ is } 4 \text{ months.} \\ 6)\overline{340} \text{ at } 3 \text{ per cent.} \\ 5.. 8 \\ \hline \text{£}1..19.. 8 \text{ at } 3\frac{1}{2} \text{ per cent. } \textit{Ans.} \end{array}$$

What is the interest of £90. for 7 months?

$$\begin{array}{r} \text{£}90 \\ 7 \\ \hline \frac{1}{2})\overline{630} \text{ at } 6 \text{ per cent.} \\ \frac{1}{6})\overline{31.. 6} \text{ at } 3 \text{ per cent.} \\ 5.. 3 \\ \hline \text{£}1..16.. 9 \text{ at } 3\frac{1}{2} \text{ per cent. } \textit{Ans.} \end{array}$$

What is the interest of £125. for 10 months?

$$\begin{array}{r} \text{£}125 \quad \frac{1}{2} \text{ of } 10 \text{ months is } 5 \text{ months.} \\ 5 \quad \frac{1}{6}) \\ \hline 62\overline{)5} = \text{£}3.. 2.. 6 \text{ at } 3 \text{ per cent.} \\ 10.. 5 \\ \hline \text{£}3..12..11 \textit{ Ans.} \end{array}$$

What is the interest of £145..10. for 12 months?

£145..10 $\frac{1}{2}$ of 12 months is 6 months.

$$\begin{array}{r} \frac{6}{87 \overline{) 3.. 0}} = \frac{\frac{1}{6})}{£4.. 7.. 3\frac{1}{2}} \text{ at 3 per cent.} \\ \underline{14.. 6\frac{1}{2}} \end{array}$$

£5.. 1..10 *Ans.*

What is the interest of £365. for 8 months?

£365

4 $\frac{1}{2}$ of 8 is 4 months.

$$\begin{array}{r} \frac{1}{8}) 146 \overline{) 0} \text{ at 3 per cent.} \\ \underline{24.. 4} \end{array}$$

£8..10.. 4 at $3\frac{1}{2}$ per cent. *Ans.*

What is the interest of £540. for 9 months?

£540

9

$$\frac{1}{2}) 486 \overline{) 0}$$

$$\begin{array}{r} \frac{1}{6}) 243.. 0 \text{ at 3 per cent.} \\ \underline{40.. 6} \end{array}$$

287.. 6 = £14..7..6. at $3\frac{1}{2}$ per cent. *Ans.*

What is the interest of £650. for 11 months?

£650

11

$$\frac{1}{2}) 715 \overline{) 0}$$

$$\begin{array}{r} \frac{1}{6}) 357.. 6 \text{ at 3 per cent.} \\ \underline{59.. 7} \end{array}$$

417.. 1 = £20..17..1. at $3\frac{1}{2}$ per cent. *Ans.*

What is the interest of £1225. for 8 months?

£1225

4 $\frac{1}{2}$ of 8 is 4 months.

$$\begin{array}{r} \frac{1}{6}) 190 \overline{) 0} \text{ at 3 per cent.} \\ \underline{81.. 8} \end{array}$$

571.. 8 = £28..11..8. at $3\frac{1}{2}$ per cent. *Ans.*

What is the interest of £575. for 1 year and 4 months?

£575

8 $\frac{1}{2}$ of 16 is 8 months.

$$\begin{array}{r} \frac{1}{6}) 460 \overline{) 0} \text{ at 3 per cent.} \\ \underline{76.. 8} \end{array}$$

536.. 8 = £26..16..8. at $3\frac{1}{2}$ per cent. *Ans.*

What is the interest of £475. for 1 year and 8 months?

$$\begin{array}{r}
 £475 \\
 \underline{10} \quad \frac{1}{2} \text{ of } 20 \text{ is } 10 \text{ months.} \\
 6)475|0 \quad \text{at } 3 \text{ per cent.} \\
 \underline{79.. 2} \\
 554.. 2 = £27..14..2. \text{ at } 3\frac{1}{2} \text{ per cent. } Ans.
 \end{array}$$

What is the interest of £100. for 12 months at $3\frac{1}{2}$ per cent.?

$$\begin{array}{r}
 £100 \\
 \underline{6} \quad \frac{1}{2} \text{ of } 12 \text{ is } 6 \text{ months.} \\
 6)60|0 \quad \text{Proof of } 3\frac{1}{2} \text{ per cent. being} \\
 \underline{10.. 0} \quad \text{perfectly accurate.} \\
 s.70.. 0 = £3..10.
 \end{array}$$

RULE for interest at 3 per cent.—Three per cent. being the half of 6 per cent. calculate at 6 per cent. and take half the amount.

Or, when the months are even, multiply the principal by half the months, which saves the trouble of going into 6 per cent.

EXAMPLES.

WHAT is the interest of £40. for 2 months?

$$\begin{array}{r}
 £40 \\
 \underline{1} \text{ being } \frac{1}{2} \text{ of } 2 \text{ months.} \\
 s.4|0 \text{ } Ans.
 \end{array}$$

What is the interest of £45..10. for 4 months?

$$\begin{array}{r}
 £45..10 \\
 \underline{2} \text{ the } \frac{1}{2} \text{ of } 4 \text{ months.} \\
 s.9|1\frac{1}{2}d. \text{ } Ans.
 \end{array}$$

What is the interest of £55..10. for 8 months?

$$\begin{array}{r}
 £55..10 \\
 \underline{4} \text{ the } \frac{1}{2} \text{ of } 8 \text{ months.} \\
 22|2\frac{2}{5} = £1..2..2\frac{2}{5}. \text{ } Ans.
 \end{array}$$

What is the interest of £91..10. for 10 months?

$$\begin{array}{r}
 £91..10 \\
 \underline{5} \text{ the } \frac{1}{2} \text{ of } 10 \text{ months.} \\
 45|7..10 = £2..5..9. \text{ } Ans.
 \end{array}$$

What is the interest of £125..10. for 12 months?

$$\begin{array}{r} \text{£}125..10 \\ 6 \text{ the } \frac{1}{2} \text{ of 12 months.} \\ \hline 75|3\frac{5}{8} = \text{£}3..15..3\frac{1}{2}. \text{ Ans.} \end{array}$$

What is the interest of £130. for 7 months?

$$\begin{array}{r} \text{£}130 \\ 7 \\ \hline 2)91|0 \\ 45.. 6 = \text{£}2..5..6. \text{ Ans.} \end{array}$$

What is the interest of £155..6..8. for 9 months?

$$\begin{array}{r} \text{£}155.. 6.. 8 \\ 9 \\ \hline 2)139|8\frac{8}{5} 0 \\ 69..10\frac{4}{5} = \text{£}3..9..10\frac{4}{5}. \text{ Ans.} \end{array}$$

What is the interest of £225. for 5 months?

$$\begin{array}{r} \text{£}225 \\ 5 \\ \hline 112|5 = \text{£}5..12.. 6 \text{ at 6 per cent.} \\ \text{£}2..16.. 3' \text{ at 3 per cent.} \end{array}$$

What is the interest of £395. for 11 months?

$$\begin{array}{r} \text{£}395 \\ 11 \\ \hline 434|5 = \text{£}21..14.. 6 \text{ at 6 per cent.} \\ \text{£}10..17.. 3 \text{ at 3 per cent.} \end{array}$$

What is the interest of £550. for 7 months?

$$\begin{array}{r} \text{£}550 \\ 7 \\ \hline \frac{1}{2})385|0 \\ 192.. 6 = \text{£}9..12..6. \text{ Ans.} \end{array}$$

What is the interest of £651..10. for 1 year 2 months?

$$\begin{array}{r} \text{£}651..10 \\ 7 \text{ the } \frac{1}{2} \text{ of 14 months.} \\ \hline 456|0..10 = \text{£}22..16..0\frac{1}{2}. \text{ or } \frac{5}{8}d. \text{ Ans.} \end{array}$$

What is the interest of £650..5. for 1 year 6 months?

$$\text{£}650..5$$

9 is $\frac{1}{2}$ of 18 months.

$$\begin{array}{r} 585 \overline{)2..5} = \text{£}29..5..2\frac{1}{2}. \text{ Ans.} \end{array}$$

What is the interest of £728..1..6. for 1 year and 8 months?

$$\text{£}728..1..6$$

10 is $\frac{1}{2}$ of 20 months.

$$\begin{array}{r} 728 \overline{)0..15..0} = \text{£}36..8..0\frac{3}{4}. \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months?

$$\text{£}100$$

6 is $\frac{1}{2}$ of 12 months.

Proof of the accuracy
of the Rule.

$$\begin{array}{r} 60 \overline{)0} = \text{£}3. \text{ Ans.} \end{array}$$

RULE for Interest at $3\frac{3}{4}$ per cent.—Calculate at 3 per cent. (see Rule for 3 per cent.) to which add one-fourth of its amount.

EXAMPLES.

WHAT is the interest of £40. for 8 months at $3\frac{3}{4}$ per cent.?

$$\text{£}40$$

4 the $\frac{1}{2}$ of 8 months.

$$\begin{array}{r} \text{add } \frac{1}{4} \overline{)16 \overline{)0}} \text{ at 3 per cent.} \\ 4 \end{array}$$

$$\text{£}1..0..0 \text{ at } 3\frac{3}{4} \text{ per cent. Ans.}$$

What is the interest of £80. for 6 months?

$$\text{£}80$$

3 the $\frac{1}{2}$ of 6 months.

$$\begin{array}{r} \text{add } \frac{1}{4} \overline{)24 \overline{)0}} \text{ at 3 per cent.} \\ 6 \end{array}$$

$$\text{£}30 = \text{£}1..10. \text{ at } 3\frac{3}{4} \text{ per cent. Ans}$$

What is the interest of £98. for 10 months?

$$\text{£}98$$

5 the $\frac{1}{2}$ of 10 months.

$$\begin{array}{r} \text{add } \frac{1}{4} \overline{)49 \overline{)0}} \text{ at 3 per cent.} \\ 12..3 \end{array}$$

$$\text{£}61..3 = \text{£}3..1..3. \text{ at } 3\frac{3}{4} \text{ per cent. Ans.}$$

What is the interest of £206..13..4. for 9 months?

$$\begin{array}{r}
 \text{£}206..13..4 \\
 \hline
 9 \\
 \hline
 \frac{1}{2})186|0 \text{ at } 6 \text{ per cent.} \\
 \text{add } \frac{1}{4})93 \text{ at } 3 \text{ per cent.} \\
 \hline
 23..3 \\
 \hline
 116..3 = \text{£}5..16..3. \text{ at } 3\frac{3}{4} \text{ per cent. } \textit{Ans.}
 \end{array}$$

What is the interest of £345..9..1 $\frac{1}{4}$. for 11 months?

$$\begin{array}{r}
 \text{£}345..9..1\frac{1}{4} \\
 \hline
 11 \\
 \hline
 \frac{1}{2})380|0..0..1\frac{3}{4} \text{ at } 6 \text{ per cent.} \\
 \text{add } \frac{1}{4})190 \text{ at } 3 \text{ per cent.} \\
 \hline
 47..6 \\
 \hline
 237..6 = \text{£}11..17..6 \text{ at } 3\frac{3}{4} \text{ per cent. } \textit{Ans.}
 \end{array}$$

What is the interest of £405..10. for 1 year 8 months?

$$\begin{array}{r}
 \text{£}405..10 \\
 \hline
 10 \\
 \hline
 405|5..0 = \text{£}20..5..6 \text{ at } 3 \text{ per cent.} \\
 \hline
 5..1..4\frac{1}{2} \\
 \hline
 \text{£}25..6..10\frac{1}{2} \text{ at } 3\frac{3}{4} \text{ per cent. } \textit{Ans.}
 \end{array}$$

What is the interest of £560. for 1 yr. and 10 months?

$$\begin{array}{r}
 \text{£}560 \\
 \hline
 11 \text{ is } \frac{1}{2} \text{ of } 22 \text{ months.} \\
 \hline
 \text{add } \frac{1}{4})616|0 \text{ at } 3 \text{ per cent.} \\
 \hline
 154 \\
 \hline
 770 = \text{£}38..10. \textit{Ans.}
 \end{array}$$

What is the interest of £100. for 12 months?

$$\begin{array}{r}
 \text{£}100 \\
 \hline
 6 \text{ is } \frac{1}{2} \text{ of } 12 \text{ months.} \\
 \hline
 \text{add } \frac{1}{4})60|0 \text{ at } 3 \text{ per cent.} \\
 \hline
 15 \\
 \hline
 75 = \text{£}3..15. \textit{Proof.}
 \end{array}$$

RULE for Interest at $3\frac{1}{3}$ per cent. (the Rate in general used in Savings' Banks.)—Calculate at 5 per cent. and deduct $\frac{1}{3}$ from that amount, the remainder will be the answer.

Or, multiply the interest for 1 month at 5 per cent. by $\frac{2}{3}$ of the months when found convenient.

EXAMPLES.

WHAT is the interest of £36. for 2 months at $3\frac{1}{3}$ per cent.?

£36. for 1 month at 5 per cent. = 3s.

$\frac{2}{}$
deduct $\frac{1}{3}$) $\overline{6s.}$ at 5 per cent.

$\frac{2}{}$
Ans. 4s. at $3\frac{1}{3}$ per cent.

What is the interest of £126. for 5 months?

10s. 6d.

$\frac{5}{}$
deduct $\frac{1}{3}$) $\overline{2..12.. 6}$ at 5 per cent.
17.. 6

$\overline{£1..15.. 0}$ at $3\frac{1}{3}$ per cent. *Ans.*

What is the interest of £132. for 8 months?

11s.

$\frac{8}{}$

$\frac{1}{3}$) $\overline{4.. 8}$ at 5 per cent.
1.. 9.. 4

$\overline{£2..18.. 8}$ at $3\frac{1}{3}$ per cent. *Ans.*

What is the interest of £150. for 9 months?

12s. 6d. for 1 month at 5 per cent.

6 the $\frac{2}{3}$ of 9 months.

$\overline{£3..15.. 0}$ *Ans.*

What is the interest of £245..5. for 12 months?

£1.. 0.. $5\frac{1}{4}$ for 1 month at 5 per cent.

8 the $\frac{2}{3}$ of 12 months.

$\overline{£8.. 3.. 6}$ *Ans.*

What is the interest of £365..15. for 1 yr. 3 months?

£1..10.. $5\frac{3}{4}$ for 1 month at 5 per cent.

10 the $\frac{2}{3}$ of 15 months.

£15.. 4.. $9\frac{1}{2}$ *Ans.*

What is the interest of £100. for 12 months?

8s. 4d. for 1 month at 5 per cent.

8 the $\frac{2}{3}$ of 12 months.

£3.. 6.. 8 *Proof.*

RULE for Interest at $2\frac{1}{2}$ per cent.—Calculate at 5 per cent. and take half that amount.

Or, multiply the interest for 1 month at 5 per cent. by $\frac{1}{2}$ the months, when found convenient.

EXAMPLES

WHAT is the interest of £36. for 3 months?

3s.

3

take $\frac{1}{2}$) 9s. at 5 per cent.

s.4.. 6d. at $2\frac{1}{2}$ per cent. *Ans.*

What is the interest of £48. for 4 months?

4s. for 1 month at 5 per cent.

2 the $\frac{1}{2}$ of 4 months.

8s. at $2\frac{1}{2}$ per cent. *Ans.*

What is the interest of £120. for 7 months?

10s.

7

or, 10s. for 1 month.

take $\frac{1}{2}$) £3..10 at 5 per cent.

$3\frac{1}{2}$ is $\frac{1}{2}$ of 7 months.

£1..15 at $2\frac{1}{2}$ per cent. £1..15 *Ans.*

What is the interest of £145..10. for 8 months?

12s. $1\frac{1}{2}$ d. for 1 month at 5 per cent.

4 the $\frac{1}{2}$ of 8 months.

£2.. 8.. 6 at $2\frac{1}{2}$ per cent. *Ans.*

What is the interest of £240. for 15 months?

£1. for 1 month at 5 per cent.

$7\frac{1}{2}$ the $\frac{1}{2}$ of 15 months.

£7..10 *Ans.*

What is the interest of £490..5. for 1 yr. and 4 months?

£2.. 0..10 $\frac{1}{4}$ for 1 month at 5 per cent.
8 the $\frac{1}{2}$ of 16 months.

£16.. 6..10 at 2 $\frac{1}{2}$ per cent. *Ans.*

What is the interest of £368..2..6. for 1 year and 10 months?

£1..10.. 8 $\frac{1}{8}$ for 1 month at 5 per cent.
11

£16..17.. 5 $\frac{5}{8}$ *Ans.*

What is the interest of £968..10. for 2 years 1 month?

£4.. 0.. 8 $\frac{1}{2}$
12 $\frac{1}{2}$ the $\frac{1}{2}$ of 25 months.

£50.. 8..10 $\frac{1}{4}$ *Ans.*

What is the interest of £1000..10. for 2 yrs. 4 months?

£4.. 3.. 4 $\frac{1}{2}$ for 1 month at 5 per cent.
14

£58.. 7.. 3 *Ans.*

What is the interest of £100. for 12 months?

8s. 4d. for 1 month at 5 per cent.
6 the $\frac{1}{2}$ of 12 months.

£2..10.. 0 *Proof.*

RULE for interest at 2 per cent.—Calculate at 6 per cent. and take $\frac{1}{3}$, which will be the answer.

Or, multiply the principal by $\frac{1}{3}$ of the months, which saves the trouble of finding the interest at 6 per cent.

EXAMPLES.

WHAT is the interest of £50. for 3 months at 2 per cent.?

£50
1 the $\frac{1}{3}$ of 3 months.
s.5|0 *Ans.*

What is the interest of £55. for 4 months?

£55
4
take $\frac{1}{3}$ 22|0 at 6 per cent.
s.7.. 4 at 2 per cent. *Ans.*

What is the interest of £70..10. for 5 months?

$$\begin{array}{r} \text{£70..10} \\ \hline 5 \quad 3) \\ 35 \overline{) 2..10} = \text{£1..15..} \end{array}$$

3 at 6 per cent.
11.. 9 at 2 per cent. *Ans.*

What is the interest of £80..15. for 6 months?

$$\begin{array}{r} \text{£80..15} \\ \hline 2 \text{ the } \frac{1}{3} \text{ of 6 months.} \\ 16 \overline{) 1..10} = 16s. 1\frac{3}{4}d. \text{ or } \frac{4}{5}. \end{array}$$

Ans.

What is the interest of £160..12..6. for 8 months?

$$\begin{array}{r} \text{£160..12..} \quad 6 \\ \hline 8 \quad \frac{1}{3}) \\ 128 \overline{) 5..} \quad 0.. \quad 0 = \text{£6..} \end{array}$$

8.. 6 at 6 per cent.
£2.. 2..10 at 2 per cent. *Ans.*

What is the interest of £247..10. for 9 months?

$$\begin{array}{r} \text{£247..10} \\ \hline 3 \text{ the } \frac{1}{3} \text{ of 9 months.} \\ 74 \overline{) 2..10} = \text{£3..14..} \end{array}$$

3. *Ans.*

What is the interest of £345..1..6. for 10 months?

$$\begin{array}{r} \text{£345..} \quad 1.. \quad 6 \\ \hline 10 \quad \frac{1}{3}) \\ 345 \overline{) 0..15..} \quad 0 = \text{£17..} \end{array}$$

5.. 0 $\frac{3}{4}$ at 6 per cent.
£5..15.. 0 $\frac{1}{4}$ *Ans.*

What is the interest of £356..7. for 1 year 3 months?

$$\begin{array}{r} \text{£356..} \quad 7 \\ \hline 5 \text{ the } \frac{1}{3} \text{ of 15 months.} \\ 178 \overline{) 1..15} = \text{£8..18..} \end{array}$$

2. *Ans.*

What is the interest of £425. for 1 year and 9 months?

$$\begin{array}{r} \text{£425} \\ \hline 7 \text{ the } \frac{1}{3} \text{ of 21 months.} \\ 297 \overline{) 5} = \text{£14..17..} \end{array}$$

6. *Ans.*

What is the interest of £480..3..4. for 2 years and 3 months?

$$\begin{array}{r} \text{£480..} \quad 3.. \quad 4 \\ \hline 9 \text{ the } \frac{1}{3} \text{ of 27 months.} \\ 432 \overline{) 1..10..} \quad 0 = \text{£21..12..} \end{array}$$

1 $\frac{4}{5}$. *Ans.*

What is the interest of £655..12..6. for 2 years at 2 per cent.?

$$\begin{array}{r} \text{£}655..12..6 \\ \hline 8 \text{ the } \frac{1}{3} \text{ of 24 months.} \\ 524 \overline{)5..0..0} = \text{£}26..4..6. \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months?

$$\begin{array}{r} \text{£}100 \\ \hline 4 \text{ the } \frac{1}{3} \text{ of 12 months.} \\ 40 \overline{)0} = \text{£}2. \text{ Proof.} \end{array}$$

RULE for Interest at $1\frac{1}{2}$ per cent.—Calculate at 6 per cent., and take $\frac{1}{4}$, which will be the answer.

Or, multiply the principal by $\frac{1}{4}$ of the months (when found convenient) which gives the answer without going into 6 per cent.

EXAMPLES.

WHAT is the interest of £30. for 4 months?

$$\begin{array}{r} \text{£}30 \\ \hline 1 \text{ the } \frac{1}{4} \text{ of 4 months.} \\ s.3 \overline{)0} \text{ Ans.} \end{array}$$

What is the interest of £50. for 5 months?

$$\begin{array}{r} \text{£}50 \\ \hline 5 \\ \hline \text{take } \frac{1}{4} \overline{)25 \overline{)0}} \text{ at 6 per cent.} \\ s.6..3 \text{ Ans.} \end{array}$$

What is the interest of £70. for 7 months?

$$\begin{array}{r} \text{£}70 \\ \hline 7 \\ \hline \text{take } \frac{1}{4} \overline{)49 \overline{)0}} \text{ at 6 per cent.} \\ s.12..3 \text{ at } 1\frac{1}{2} \text{ per cent. Ans.} \end{array}$$

What is the interest of £75..10. for 8 months?

$$\begin{array}{r} \text{£}75..10 \\ \hline 2 \text{ the } \frac{1}{4} \text{ of 8 months.} \\ s.15..1\frac{1}{2} \text{ Ans.} \end{array}$$

What is the interest of £125..6..8. for 9 months?

$$\begin{array}{r} \text{£}125..6..8 \\ \hline 9 \\ \hline 112 \overline{)8..0..0} = \text{£}5..12..9\frac{2}{5} \text{ at 6 per cent.} \\ \text{£}1..8..2\frac{2}{5} \text{ at } 1\frac{1}{2} \text{ per cent. Ans.} \end{array}$$

What is the interest of £165..13..4. for 12 months?

$$\begin{array}{r} \text{£}165..13..4 \\ \quad 3 \text{ the } \frac{1}{4} \text{ of 12 months.} \\ \hline 49|7..0..0 = \text{£}2..9..8\frac{2}{5}. \text{ Ans.} \end{array}$$

What is the interest of £245..10. for 1 yr. 8 months?

$$\begin{array}{r} \text{£}245..10 \\ \quad 5 \text{ the } \frac{1}{4} \text{ of 20 months.} \\ \hline 122|7..10 = \text{£}6..2..9. \text{ Ans.} \end{array}$$

What is the interest of £365. for 2 years?

$$\begin{array}{r} \text{£}365 \\ \quad 6 \text{ the } \frac{1}{4} \text{ of 24 months.} \\ \hline 219|0 = \text{£}10..19. \text{ Ans.} \end{array}$$

What is the interest of £475. for 2 years 4 months?

$$\begin{array}{r} \text{£}475 \\ \quad 7 \text{ the } \frac{1}{4} \text{ of 28 months.} \\ \hline 332|5 = \text{£}16..12..6. \text{ Ans.} \end{array}$$

What is the interest of £575. for 3 years?

$$\begin{array}{r} \text{£}575 \\ \quad 9 \text{ the } \frac{1}{4} \text{ of 36 months.} \\ \hline 517|5 = \text{£}25..17..6. \text{ Ans.} \end{array}$$

What is the interest of £840..10. for 3 yrs. 4 months?

$$\begin{array}{r} \text{£}840..10 \\ \quad 10 \text{ the } \frac{1}{4} \text{ of 40 months.} \\ \hline 840|5..0 = \text{£}42..0..6. \text{ Ans.} \end{array}$$

What is the interest of £951. for 3 years 8 months?

$$\begin{array}{r} \text{£}951 \\ \quad 11 \text{ the } \frac{1}{4} \text{ of 44 months.} \\ \hline 1046|1 = \text{£}52..6..1\frac{1}{5}. \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months?

$$\begin{array}{r} \text{£}100 \\ \quad 3 \text{ the } \frac{1}{4} \text{ of 12 months.} \\ \hline 30|0 = \text{£}1..10. \text{ Proof.} \end{array}$$

RULE for Interest at $1\frac{1}{4}$ per cent.—Calculate at 5 per cent. and take $\frac{1}{4}$, or multiply the interest for one month at 5 per cent. by $\frac{1}{4}$ of the months.

WHAT is the interest of £48. for 4 months?

$$\begin{array}{r} 4s. \text{ for 1 month at 5 per cent.} \\ 1 \text{ the } \frac{1}{4} \text{ of 4 months.} \\ \hline 4s. \text{ Ans.} \end{array}$$

What is the interest of £96. for 5 months?

$$\begin{array}{r} 8s. \\ 5 \\ \hline \frac{1}{4})2.. 0.. 0 \text{ at 5 per cent.} \\ \hline 10s. \text{ Ans.} \end{array}$$

What is the interest of £99..15. for 12 months?

$$\begin{array}{r} 8s. 3\frac{3}{4}d. \text{ for 1 month at 5 per cent.} \\ 3 \text{ the } \frac{1}{4} \text{ of 12 months.} \\ \hline £1.. 4.. 11\frac{1}{4} \text{ Ans.} \end{array}$$

What is the interest of £144..10. for 11 months?

$$\begin{array}{r} 12s. 0\frac{1}{2}d. \\ 11 \\ \hline \text{take off } \frac{1}{4})6..12.. 5\frac{1}{2} \text{ at 5 per cent.} \\ \hline £1..13.. 1\frac{3}{8} \text{ Ans.} \end{array}$$

What is the interest of £199..15. for 1 year 4 months?

$$\begin{array}{r} 16s. 7\frac{3}{4}d. \text{ for 1 month at 5 per cent.} \\ 4 \text{ the } \frac{1}{4} \text{ of 16 months.} \\ \hline £3.. 6.. 7 \text{ Ans.} \end{array}$$

What is the interest of £240. for 1 year 8 months?

$$\begin{array}{r} £1 \text{ for 1 month at 5 per cent.} \\ 5 \text{ the } \frac{1}{4} \text{ of 20 months.} \\ \hline £5 \text{ Ans.} \end{array}$$

What is the interest of £365..2..6. for 2 years and 8 months?

$$\begin{array}{r} £1..10.. 5\frac{1}{8} \text{ for 1 month at 5 per cent.} \\ 8 \text{ the } \frac{1}{4} \text{ of 32 months.} \\ \hline £12.. 3.. 5 \text{ Ans.} \end{array}$$

What is the interest of £480..15. for 3 years?

$$\begin{array}{r} £2.. 0.. 0\frac{3}{4} \text{ for 1 month at 5 per cent.} \\ 9 \text{ is } \frac{1}{4} \text{ of 36 months.} \\ \hline £18.. 0.. 6\frac{3}{4} \text{ Ans.} \end{array}$$

What is the interest of £100. for 12 months?

8s. 4d. for 1 month.

3 the $\frac{1}{4}$ of 12 months.

£1.. 5.. 0 *Ans.*

RULE for Interest, Discount, or Commission at $\frac{1}{2}$ per cent.—Cut off the unit's figure of the £. consider those not cut off as shillings, and the unit's figure cut off consider as pence and as many fifths, for 4 or 5 in the shillings add $\frac{1}{4}d.$ for 8 or 10 add $\frac{1}{2}d.$ for 12 or 14 add $\frac{3}{4}d.$ and for 16s. 8d. and upwards add 1d. which will give the answer required.

DEMONSTRATION.

Half per cent. being the 200th. part of the whole amount, the said amount is divided by 200, which is more fully explained in the Demonstration for Interest for 6 per Cent. for Months. See Page 80.

EXAMPLES.

WHAT is the commission on £120. at $\frac{1}{2}$ per cent.?

£12|0 = 12s. *Ans.*

Here as by the Rule the unit's figure is cut off, which is a cipher, and is to be considered as pence, and the 12 not cut off is directed to be considered as shillings, which gives 12s.

What is the discount on £321. at $\frac{1}{2}$ per cent.?

£32|1 = £1..12..1 $\frac{1}{5}$. *Ans.*

Here the figure cut off is 1 $\frac{1}{5}d.$ the 32 not cut off are 32 shillings.

What is the interest of £425. at $\frac{1}{2}$ per cent.?

£42|5 = £2..2..6. *Ans.*

The 5 cut of is 5 $\frac{5}{5}$. equal to 6d. This is of course the interest for 12 months.

What is the commission on £1255..5. at $\frac{1}{2}$ per cent.

£125|5.. 5 = £6..5..6 $\frac{1}{4}$. *Ans.*

For the 5 shillings, $\frac{1}{4}d.$ is to be allowed, see Rule.

What is the brokerage on £1450..12..6. at $\frac{1}{2}$ per cent.?

£145|0..12..6 = £7..5..0 $\frac{3}{4}$. *Ans.*

What is the discount of £1552. at $\frac{1}{2}$ per cent.?

$$£155|2 = £7..15..2\frac{2}{5}. \text{ or } 2\frac{1}{4}d. \text{ Ans.}$$

Find the commission on £7647. at $\frac{1}{2}$ per cent.

$$£764|7 = £38..4..8\frac{2}{5}. \text{ or } \frac{1}{4}d. \text{ Ans.}$$

The $7\frac{7}{5}d.$ are = to $8\frac{2}{5}d.$ as five-fifths are $1d.$ seven-pence seven-fifths are equal to $8\frac{2}{5}d.$

What is the discount on £8769..16..8. at $\frac{1}{2}$ per cent.?

$$£876|9..16..8 = £43..16..11\frac{4}{5}. \text{ or } \frac{3}{4}d. \text{ Ans.}$$

What is the brokerage on £10568..4. at $\frac{1}{2}$ per cent.?

$$£1056|8..4 = £52..16..9\frac{3}{4}. \text{ Ans.}$$

Commission, Discount, Brokerage, at $\frac{1}{2}$, $\frac{1}{4}$, or $\frac{1}{8}$, per cent. will be found particularly useful to bankers and merchants, as they are allowances made by the one to the other for keeping the accounts, &c.

If it be found necessary to find the Commission, &c. at $\frac{1}{4}$ per cent. take the half of $\frac{1}{2}$ per cent. and if $\frac{1}{8}$ per cent. is wanted, take the $\frac{1}{4}$ of half per cent. Thus:

Find the commission on £4270..10 at $\frac{1}{4}$ per cent.

$$£427|0..10 = \frac{1}{2})£21.. 7.. 0\frac{1}{2} \text{ at } \frac{1}{2} \text{ per cent.}$$

$$£10..13.. 6\frac{1}{4} \text{ at } \frac{1}{4} \text{ per cent. Ans.}$$

Find the discount on £8485..18..2. at $\frac{1}{8}$ per cent.

$$£848|5..18..2. = \frac{1}{4})£42.. 8.. 7 \text{ at } \frac{1}{2} \text{ per cent.}$$

$$£10..12.. 1\frac{3}{4} \text{ at } \frac{1}{8} \text{ per cent. Ans.}$$

Should Interest be required at 1 per cent. Double $\frac{1}{2}$ per cent. or take the $\frac{1}{6}$ th. of 6 per cent.

As calculations of Interest for days are indispensably necessary to bankers, merchants, traders, &c. and the ordinary plan heretofore introduced being tedious and difficult for making such calculations, we beg leave to introduce the following short and easy method, which has given the greatest possible satisfaction to all persons who have studied it.

RULE for Interest for days at £6. per cent. per annum.—Multiply the principal by the days; for each 100 they produce, allow 4 pence, but for each 6 shillings of Interest found out deduct or take off one penny, and so in proportion; the remainder will be the answer.

DEMONSTRATION.

It will be found that the interest of £100. for one day at 6 per cent. will produce $3\frac{3}{8}\frac{4}{5}d.$, which being nearly $4d.$ we consider it as such, and then the deduction of $1d.$ for each $6s.$ corrects the error.

It may also be considered as counting the year as 360 days, instead of 365, consequently the difference must be deducted, namely, the same part of the amount, as the 5 days are of 365 which is $\frac{1}{72}$, or a penny for each $6s.$ will give an answer sufficiently accurate.

Note, Any sums for any number of days, when multiplied together and producing 100, would give the same result, that is, £20. for 5 days, £25. for 4 days, each when multiplied together, would be the same as £100. for 1 day, or £1. for 100 days. Hence the cause of adopting the above method, which has been allowed by the most competent judges to be perfectly accurate, and in a high degree to combine ingenuity and simplicity.

EXAMPLES.

WHAT is the interest of £10. for 10 days at 6 per cent.?

£10

10

100 = to 4d. Ans.

The Answer being only $4d.$ nothing can be well taken off.

What is the interest of £20. for 20 days at 6 per cent.?

£20

20

400 = 1s. 4d.

1s. 4d. being nearly the quarter of 6s. a farthing may be taken off.

$0\frac{1}{4}$ deduct.

s.1.. $3\frac{3}{4}$ Ans.

What is the interest of £30. for 30 days at 6 per cent.?

$$\begin{array}{r} \text{£}30 \\ 30 \\ \hline 900 = 3s. 0d. \\ 0\frac{1}{2} \text{ deduct for } 3s. \\ \hline s.2..11\frac{1}{2} \text{ Ans.} \end{array}$$

Note, As 100 is 4*d.* 300 must be 1*s.* therefore dividing by 300 gives shillings, observing to allow 4*d.* for every 100 over, after dividing by 300, as the following Examples more clearly explain.

What is the interest of £30. for 30 days?

$$\begin{array}{r} \text{£}30 \\ 30 \\ \hline 3|00)9|00 \\ s.3 \text{ minus } \frac{1}{2}d. \text{ Ans. } 2s. 11\frac{1}{2}d. \end{array}$$

By cancelling 2 figures at each side, it reduces the operation to simply dividing by 3.

What is the interest of £40. for 40 days?

$$\begin{array}{r} \text{£}40 \\ 40 \\ \hline 3|00)16|00 \\ s.5.. 4 \text{ minus } 1d. \end{array}$$

100 over $\pm$ to 4*d.* 5*s.* 4*d.* being nearly 6*s.*
Ans. 5*s.* 3*d.*

What is the interest of £45. for 40 days?

$$\begin{array}{r} \text{£}45 \\ 40 \\ \hline 3|00)18|00 \\ s.6 \text{ minus } 1d. \text{ Ans. } 5s. 11d. \end{array}$$

What is the interest of £50. for 50 days?

$$\begin{array}{r} \text{£}50 \\ 50 \\ \hline 3|00)25|00 \\ s.8.. 4 \text{ minus } 1\frac{1}{2}d. \text{ Ans. } 8s. 2\frac{1}{2}d. \end{array}$$

100 over, for which allow 4*d.*

What is the interest of £60. for 60 days?

$$\begin{array}{r} \text{£}60 \\ 60 \\ \hline 3|00)36|00 \\ s.12.. 0 \text{ minus } 2d. \text{ Ans. } 11s. 10d. \end{array}$$

What is the interest of £65. for 70 days?

$$\begin{array}{r}
 \text{£}65 \\
 \underline{70} \quad 50 \text{ over, for which allow } 2d. \\
 3|00)45|50 \\
 \hline
 s.15..2 \text{ minus } 2\frac{1}{2}d. \quad \text{Ans. } 14s. 11\frac{1}{2}d.
 \end{array}$$

What is the interest of £85. for 80 days?

$$\begin{array}{r}
 \text{£}85 \\
 \underline{80} \\
 3|00)68|00 \\
 \hline
 s.22..8 \text{ minus } 3\frac{3}{4}d. \quad \text{Ans. } \text{£}1..2..4\frac{1}{4}d.
 \end{array}$$

What is the interest of £95. for 50 days?

$$\begin{array}{r}
 \text{£}95 \\
 \underline{50} \quad 250 \text{ over at } 4d. \text{ per } 100, \text{ comes to } \\
 3|00)47|50 \quad 10 \text{ pence.} \\
 \hline
 s.15..10 \text{ minus } 2\frac{1}{2}d. \quad \text{Ans. } 15s. 7\frac{1}{2}d.
 \end{array}$$

What is the interest of £125. for 95 days?

$$\begin{array}{r}
 \text{£}125 \\
 \underline{95} \quad 175 \text{ over, being } 1\frac{3}{4} \text{ of a } 100, \text{ allow } \\
 625 \quad 7 \text{ pence.} \\
 1125 \\
 3|00)118|75 \\
 \hline
 s.39..7 \text{ minus } 6\frac{1}{2}d. \quad \text{Ans. } \text{£}1..19..0\frac{1}{2}.
 \end{array}$$

What is the interest of £155. for 110 days?

$$\begin{array}{r}
 \text{£}155 \\
 \underline{110} \quad 250 \text{ over, at } 4d. \text{ a } 100, \text{ comes to } \\
 3|00)170|50 \quad 10 \text{ pence.} \\
 \hline
 56..10 \text{ minus } 9\frac{1}{2}d. \quad \text{Ans. } \text{£}2..16..0\frac{1}{2}.
 \end{array}$$

What is the interest of £3405. for 5 days?

$$\begin{array}{r}
 \text{£}3405 \\
 \underline{5} \quad 225 \text{ being } 2\frac{1}{4} \text{ of } 100, \text{ allow } 9 \text{ pence.} \\
 3|00)170|25 \\
 \hline
 56..9 \text{ minus } 9\frac{1}{2}d. \quad \text{Ans. } \text{£}2..15..11\frac{1}{2}.
 \end{array}$$

What is the interest of £975. for 130 days?

$$\begin{array}{r}
 \text{£}975 \\
 \quad 130 \qquad 150 \text{ over, allow } 6d. \\
 3|00 \overline{)1267|50} \\
 \hline
 422.. \text{ 6 minus } 5s. \text{ 10d. } \textit{Ans. £}20..16..8.
 \end{array}$$

What is the interest of £1245..10. for 20 days?

$$\begin{array}{r}
 \text{£}1245..10 \\
 \quad 20 \qquad 10 \text{ over, allow } \frac{1}{2}d. \\
 3|00 \overline{)249|10} \\
 \hline
 83.. \text{ 0}\frac{1}{2} \text{ minus } 1s. \text{ 1}\frac{3}{4}d. \textit{Ans. £}4..1..10\frac{3}{4}.
 \end{array}$$

What is the interest of £1680..10. for 30 days?

$$\begin{array}{r}
 \text{£}1680..10 \\
 \quad 30 \qquad 15 \text{ over, allow } \frac{1}{2}d. \\
 3|00 \overline{)504|15} \\
 \hline
 168.. \text{ 0}\frac{1}{2} \text{ minus } 2s. \text{ 3}\frac{1}{2}d. \textit{Ans. £}8..5..9.
 \end{array}$$

What is the interest of £100. for 365 days at 6 per cent.?

$$\begin{array}{r}
 365 \\
 \quad 100 \qquad 200 \text{ over, allow } 8d. \\
 3|00 \overline{)365|00} \\
 \hline
 121.. \text{ 8 minus } 1s. \text{ 8d. } \textit{Proof. £}6.
 \end{array}$$

It appears that for 1s. 8d. nothing has been allowed, which could be only $\frac{1}{4}$, but for all transactions in business the above Rule has been considered sufficiently accurate.

Any person desirous of bringing out the exact fraction (which no person in business would deem worth the trouble) by taking a $\frac{1}{7\frac{1}{3}}$ off, instead of $\frac{1}{7\frac{1}{2}}$, which is a penny for every six shillings, will find it calculated to a mathematical nicety.

To calculate Interest at 5 per cent. for days.—Find the interest at 6 per cent. agreeably to the Rule for 6 per cent. and deduct $\frac{1}{6}$ th. of that amount.

EXAMPLES.

WHAT is the interest of £45. for 40 days at 5 per cent.?

$$\begin{array}{r}
 £45 \\
 40 \\
 \hline
 3|00)18|00 \\
 \hline
 s.6 \text{ minus } 1d. \quad \frac{1}{6})5s. \ 11d. \text{ at } 6 \text{ per cent.} \\
 \hline
 11\frac{3}{4} \text{ deduct.} \\
 \hline
 \text{Ans. } s.4..11\frac{1}{4} \text{ at } 5 \text{ per cent.}
 \end{array}$$

What is the interest of £30. for 30 days?

$$\begin{array}{r}
 £30 \\
 30 \\
 \hline
 3|00)9|00 \\
 \hline
 3 \text{ minus } \frac{1}{2}d. \quad \frac{1}{6})2s. \ 11\frac{1}{2}d. \text{ at } 6 \text{ per cent.} \\
 \hline
 6 \text{ nearly.} \\
 \hline
 \text{Ans. } s.2..5\frac{1}{2} \text{ at } 5 \text{ per cent.}
 \end{array}$$

What is the interest of £60. for 60 days?

$$\begin{array}{r}
 £60 \\
 60 \\
 \hline
 3|00)36|00 \\
 \hline
 s.12 \text{ minus } 2d. \text{ at } 6 \text{ per cent. } 11s. \ 10d. \\
 \hline
 \text{deduct } \frac{1}{6} \quad s.1..11\frac{3}{4} \\
 \hline
 s.9..10\frac{1}{4} \text{ Ans.}
 \end{array}$$

What is the interest of £90. for 95 days?

$$\begin{array}{r}
 95 \\
 90 \\
 \hline
 3|00)85|50 \\
 \hline
 28.. \ 6 \text{ minus } 4\frac{3}{4}d. \text{ at } 6 \text{ per cent. } £1.. \ 8.. \ 1\frac{1}{4} \\
 \hline
 \text{deduct } \frac{1}{6} \quad 4.. \ 8\frac{1}{4} \\
 \hline
 \text{at } 5 \text{ per cent. } £1.. \ 3.. \ 5 \text{ Ans.}
 \end{array}$$

The foregoing few examples may be sufficient to shew how 5 per cent. may be done, by taking $\frac{1}{6}$ th. from 6 per cent. and by taking $\frac{1}{6}$ from the Interest, which have been calculated at 6 per cent. gives the respective answers at 5 per cent.

We now introduce calculations for Interest for days at 5 per cent. independent of finding at 6 per cent.

RULE.—Multiply the principal by $\frac{1}{3}$ of the days, or the days by $\frac{1}{3}$ of the principal, cut off the unit figure of the £. from that product, consider those not cut off as pence, deduct 1d. for each 6s. contained therein, the remainder will be the answer.

DEMONSTRATION.

In the Demonstration of Interest for Months, at 5 per cent. page 72, it was clearly proved that the interest of each £. for a month is one penny, and on that fact is founded this method for Days.

Note, If the principal and days are multiplied together, and the product divided by the number of days in a month, the quotient will doubtless be pence: but as the average month (by dividing 365 by 12 months) will be found to contain $30\frac{5}{12}$ days, (an awkward division) we proceed as if there were but 30 days in the month—consequently, only 360 in the year; and as dividing any sum by 360, instead of 365, would give a greater quotient, the difference must be deducted; so that the quotient will be the same as if it really had been divided by 365, which will be done effectually by taking such part off as the 5 remaining days are of a year, viz. a 73rd.; but 1d. for each 6s. or a 72nd. will be found near enough for use.

Now by the following examples the above dividing is materially abridged; for by *multiplying by $\frac{1}{3}$ of the days* it is only necessary to divide by $\frac{1}{3}$ of 30, which is done by cutting off the unit figure of the £s. of the product, which, as before laid down, is dividing by 10; and by that means a very tiresome operation is entirely dispensed with, and the interest of any sum, at any rate of interest, discovered by persons totally unacquainted with the rudiments of Arithmetic; and who perhaps, from their habits and constitution, &c. are unqualified for ever acquiring that useful knowledge by the ordinary method.

EXAMPLES.

WHAT is the interest of £20. for 6 days?

£20

2 is $\frac{1}{3}$ of 6.

$$\overline{d.4}0 = 4d. \text{ Ans.}$$

Here the $\frac{1}{3}$ of 6 is 2, 20 multiplied by 2 produces 40, the unit figure cut off leaves 4, which is 4*d.*, and as only 1*d.* for 6*s.* is to be deducted, 4*d.* being so trifling a part of 6*s.* we do not take any thing off.

What is the interest of £40. for 9 days?

£40

3 is $\frac{1}{3}$ of 9 days.

$$\overline{d.12}0 \text{ Ans. } 1s.$$

What is the interest of £15. for 16 days?

16 Here $\frac{1}{3}$ of 15 being easier taken than $\frac{1}{3}$ of 16, it
5 is better to multiply 16 by 5.

$$\overline{8}0 = 8d. \text{ Ans.}$$

What is the interest of £25. for 24 days?

£25

8 = $\frac{1}{3}$ of 24 days.

$$\overline{d.20}0 = 1s. 8d. \text{ minus } \frac{1}{4}d. \text{ Ans. } 1s. 7\frac{3}{4}d.$$

What is the interest of £60. for 18 days?

£60

6 = $\frac{1}{3}$ of 18 days.

$$\overline{d.36}0 = 3s. \text{ minus } \frac{1}{2}d. \text{ Ans. } 2s. 11\frac{1}{2}d.$$

What is the interest of £45. for 40 days?

40

15 = $\frac{1}{3}$ of 45.

$$\overline{d.60}0 = 5s. \text{ minus } 1d. \text{ Ans. } 4s. 11d.$$

Find the interest of £30. for 70 days.

70

10 = $\frac{1}{3}$ of 30.

$$\overline{d.70}0 = 5s. 10d. \text{ minus } 1d. \text{ Ans. } 5s. 9d.$$

What is the interest of £65. for 60 days ?

£65

20 = $\frac{1}{3}$ of 60 days.

$\overline{130}0 = 10s. 10d. \text{ minus } 2d. = 10s. 8d. \text{ Ans.}$

Note, Such part as the figure cut off is of 10, allow such part of 1d.

What is the interest of £75. for 33 days ?

£75

11 = $\frac{1}{3}$ of 33 days.

$\overline{82}5 = 6s. 10\frac{1}{2}d. \text{ minus } 1d. \text{ Ans. } 6s. 9\frac{1}{2}d.$

Here the 5 being $\frac{1}{2}$ of 10, and dividing by 10 allow $\frac{1}{2}d.$

What is the interest of £125. for 36 days ?

£125

12 = $\frac{1}{3}$ of 36 days.

$\overline{150}0 = 12s. 6d. \text{ minus } 2d. \text{ Ans. } 12s. 4d.$

What is the interest of £145. for 37 days ?

£145

$12\frac{1}{3}$

$\overline{1740}$

48

$\overline{178}8 = 14s. 10\frac{3}{4}d. \text{ minus } 2\frac{1}{2}d. \text{ Ans. } 14s. 8\frac{1}{4}d.$

Here $12\frac{1}{3}$ being $\frac{1}{3}$ of 37, multiply by $12\frac{1}{3}$, and the 8 over being the $\frac{3}{4}$ of 10, allow for it $\frac{3}{4}d.$

Find the interest of £185. for 61 days.

£185

$20\frac{1}{3}$

61 to bring in, being the $\frac{1}{3}$ of 185, the fraction over being of no consequence is rejected.

$\overline{376}1 = £1..11..4. \text{ deduct } 5\frac{1}{4}d. \text{ Ans. } £1..10..10\frac{3}{4}.$

Here the figure is cut off, being only one and the tenth of a penny, being of no consequence in business, it is rejected.

What is the interest of £250. for 150 days ?

£250

50 is $\frac{1}{3}$ of 150.

$\overline{1250}0 = £5..4..2. \text{ minus } 1s. 5d. = £5..2..9. \text{ Ans.}$

Having given sufficient examples, we shall introduce a question to prove the accuracy of the rule.

What is the interest of £240. for 73 days?

£240. for 1 year at 5 per cent. is £12.. 0.. 0

73 days are $\frac{1}{5}$ of a year = $\overline{2.. 8.. 0}$ *Ans.*

As the interest of £240. for 1 year is 240s. which is £12. and 73 days being the $\frac{1}{5}$ of a year, the interest for 73 days must be the $\frac{1}{5}$ of £12. which is £2..8.

£73

80 is $\frac{1}{3}$ of £240.

$\overline{584}0 = 584d. = £2.. 8.. 8$

minus 0.. 0.. 8

$\overline{£2.. 8.. 0}$ *Proof.*

RULE for interest for days at $4\frac{1}{2}$ per cent.—Calculate at 6 per cent. and take $\frac{1}{4}$ from the amount, the same as the Rule given for months at $4\frac{1}{2}$ per cent.

EXAMPLES.

WHAT is the interest of £45. for 40 days?

£45

40

$\overline{3}00\overline{)18}00$

6 minus 1d. = $\frac{1}{4}$ s. 5..11d. at 6 per cent.

1.. $5\frac{3}{4}$ deduct.

$\overline{s.4.. 5\frac{1}{4}}$ at $4\frac{1}{2}$ per cent. *Ans.*

What is the interest of £90. for 90 days?

£90

90

$\overline{3}00\overline{)81}00$

27 minus $4\frac{1}{2}d.$

$\frac{1}{4}$)

£1.. 6.. $7\frac{1}{2}$ at 6 per cent.

6.. $7\frac{3}{4}$

at $4\frac{1}{2}$ per cent. $\overline{s.19..11\frac{3}{4}}$ *Ans.*

Either of the above calculations may be shortened by taking $\frac{1}{4}$ either from the amount or the days, like the following :

What is the interest of £120. for 120 days?

£120 $\frac{1}{4}$ of 120 is 30, from 120 leaves 90.
90

$$3 \overline{)00} 108 \overline{)00}$$

s.36 minus 6d. £1..15..6. at $4\frac{1}{2}$ per cent. *Ans.*

The above examples will be found sufficient at $4\frac{1}{2}$ per cent. for by taking $\frac{1}{4}$ from any of the examples at 6 per cent. you have at once the interest at $4\frac{1}{2}$ per cent.

RULE for interest at 4 per cent.—Calculate by the Rule for 6 per cent. for days, and take $\frac{1}{3}$ from that amount.

EXAMPLES.

WHAT is the interest of £40. for 60 days?

£40
60 days.

$$3 \overline{)00} 24 \overline{)00}$$

$\frac{1}{3}$)
8s. minus $1\frac{1}{2}d.$ s.7..10 $\frac{1}{2}$ at 6 per cent.

2.. 7 $\frac{1}{2}$ deduct.

s.5.. 3 *Ans.*

What is the interest of £50. for 65 days?

65 days.

50

$$3 \overline{)00} 32 \overline{)50}$$

$\frac{1}{3}$)
s.10..10d. minus $1\frac{3}{4}d.$ s.10.. 8 $\frac{1}{4}d.$ at 6 per cent.

3.. 6 $\frac{3}{4}$ deduct.

Ans. s.7.. 1 $\frac{1}{2}$ at 4 per cent.

What is the interest of £75. for 70 days?

£75

70 days.

$$3 \overline{)00} 52 \overline{)50}$$

$\frac{1}{3}$)
s.17.. 6 minus 3d. s.17.. 3 at 6 per cent.

5.. 9

s.11.. 6 *Ans.*

The above calculations may be shortened, by either taking $\frac{1}{3}$ off the amount, or off the number of days, like the following

EXAMPLE.

What is the interest of £90. for 90 days?

£90 deduct $\frac{1}{3}$ of 90, leaves 60.

60 days.

$$3 \overline{)00)54} \overline{)00}$$

s.18 minus 3d. *Ans.* 17s. 9d at 4 per cent.

By taking the $\frac{1}{3}$ from the answers of any of the calculations at 6 per cent. for days, you have the amount at 4 per cent.

RULE for interest at three per cent. for days.—Calculate at 6 per cent. and take half. Or, Multiply the principal by half the days, or the days by half the principal, and proceed as in 6 per cent.

WHAT is the interest of £80. for 80 days?

£80

40 days, the $\frac{1}{2}$ of 80.

$$3 \overline{)00)32} \overline{)00}$$

s.10.. 8 minus $1\frac{3}{4}$ d. *Ans.* 10s. $6\frac{1}{4}$ d.

What is the interest of £95. for 90 days?

£95

45 = $\frac{1}{2}$ 90 days.

$$3 \overline{)00)42} \overline{)75}$$

s.14.. 3 minus $2\frac{1}{2}$ d. *Ans.* 14s. $0\frac{1}{2}$ d.

What is the interest of £129. for 81 days, at 3 per cent.?

£129

$124\frac{1}{2}$ over, at 4d. the 100, allow 5d.

$40\frac{1}{2}$ days.

$$3 \overline{)00)52} \overline{)24\frac{1}{2}}$$

s.17.. 5 minus 3d. *Ans.* 17s. 2d.

RULE for interest at $3\frac{1}{2}$ per cent. for days.—Multiply the principal by the days, for each 100 they produce allow two-pence, which gives the interest at 3 per cent. to which add $\frac{1}{6}$ th. and you have the interest at $3\frac{1}{2}$ per cent. observing to deduct 1d. for each 6s. as in the other Rules.

EXAMPLES.

WHAT is the interest of £30. for 20 days?

£30

20 days.

600 at 2*d.* per 100 = *s.*1.. 0*d.* at 3 per cent.

add $\frac{1}{8}$ 2

Ans. *s.*1.. 2 at $3\frac{1}{2}$ per cent.

By dividing the product of the Multiplication by 600, it gives shillings, as the following

EXAMPLES.

WHAT is the interest of £60. for 60 days, at $3\frac{1}{2}$ per cent.?

£60

60 days.

6|00)36|00

add $\frac{1}{8}$)6*s.* at 3 per cent.

1*s.*

Ans. 7*s.* minus $1\frac{1}{4}$ *d.* interest 6*s.* 10 $\frac{3}{4}$ *d.* at $3\frac{1}{2}$ per cent.

What is the interest of £90. for 80 days?

£90

80 days.

6|00)72|00

add $\frac{1}{8}$)12*s.* at 3 per cent.

2

14*s.* minus $2\frac{1}{2}$ *d.* interest 13*s.* 9 $\frac{1}{2}$ *d.* at $3\frac{1}{2}$ per cent.

What is the interest of £125. for 70 days?

£125

70 days.

6|00)87|50

350 over at 2*d.* per 100 = 7*d.*

add $\frac{1}{8}$)14.. 7

2.. 5

Ans. 17*s.* minus 3*d.* interest 16*s.* 9*d.* at $3\frac{1}{2}$ per cent.

What is the interest of £365. for 170 days?

£365

170 days.

250 over = 5*d.*

6|00)620|50

add $\frac{1}{8}$)103.. 5

17.. 3 nearly.

Ans. *s.*120.. 8 minus 1*s.* 8*d.* interest £5..19. at $3\frac{1}{2}$.

What is the interest of £100. for 365 days, at $3\frac{1}{2}$ per cent.?

$$\begin{array}{r}
 365 \text{ days.} \\
 100 \text{ £.} \qquad 500 \text{ at } 2d. \text{ per } 100 = 10d. \\
 6 \overline{)00} 365 \overline{)00} \\
 \text{add } \frac{1}{8} \overline{)60..10} \\
 10.. 1\frac{3}{4} \\
 s.70..11\frac{3}{4} \text{ minus } 11\frac{3}{4}d. \text{ interest } \text{£}3..10. \text{ at } 3\frac{1}{2}. \text{ Proof.}
 \end{array}$$

RULE for interest for days, at $2\frac{1}{2}$ per cent.—Calculate at 5 per cent. (see Rule) and take half, which will be the answer.

EXAMPLES.

What is the interest of £60. for 60 days, at $2\frac{1}{2}$ per cent.?

$$\begin{array}{r}
 \text{£}60 \\
 20 \text{ is } \frac{1}{3} \text{ of } 60 \text{ days.} \\
 d.120 \overline{)0} = \frac{1}{2} \overline{)10} s. \text{ at } 5 \text{ per cent. minus } 2d. \\
 5s. \text{ minus } 1d. \quad \text{Ans. } 4s. 11d.
 \end{array}$$

What is the interest of £95. for 33 days, at $2\frac{1}{2}$ per cent.?

$$\begin{array}{r}
 \text{£}95 \\
 11 \text{ is } = \frac{1}{3} \text{ of } 33. \\
 104 \overline{)5} = \frac{1}{2} \overline{)8} s. 8\frac{1}{2}d. \\
 4.. 4\frac{1}{4} \text{ minus } \frac{3}{4}d. \quad \text{Ans. } 4s. 3\frac{1}{2}d.
 \end{array}$$

What is the interest of £185. for 150 days?

$$\begin{array}{r}
 \text{£}185 \\
 50 \text{ is } \frac{1}{3} \text{ of } 150. \\
 925 \overline{)0} = \text{£}3..17.. 1 \\
 1.. 1 \text{ minus.} \\
 \frac{1}{2} \overline{)3..16.. 0} \text{ at } 5 \text{ per cent.} \\
 \text{£}1..18.. 0 \text{ at } 2\frac{1}{2} \text{ per cent.}
 \end{array}$$

It is immaterial whether the penny for every 6s. is taken off when at 5 per cent. or at $2\frac{1}{2}$ per cent.

What is the interest of £360. for 240 days?

$$\begin{array}{r}
 \text{£}360 \\
 80 \text{ is } \frac{1}{3} \text{ of } 240. \\
 d.2880 \overline{)0} = \frac{1}{2} \overline{)£12.. 0.. 0} \\
 6.. 0.. 0 \\
 \text{minus } 1.. 8 \qquad \text{£}5..18..4. \quad \text{Ans.}
 \end{array}$$

average days of a month : should it not go exactly, but leave 5 or 6, they will compensate, and nothing need be allowed.

Note, Though this method possesses a decided advantage over any other way we have seen practised, yet it is superseded by the other method for 5 per cent. in page 109. You may convince yourself of the truth by inspecting £120. for 95 days (just following) done by both methods.

EXAMPLES.

WHAT is the interest of £100. for 365 days?

$$\begin{array}{r} 365 \text{ days.} \\ 100 \\ \hline 7300)36500(\text{£}5. \text{ Ans.} \\ \dots \end{array}$$

What is the interest of £120. for 95 days?

$$\begin{array}{r} 95 \text{ days.} \\ 120 \text{ £. s. d.} \\ \hline 7300)11400(1..11..2\frac{3}{4} \text{ at 5 per cent.} \\ 365)4100 \\ 450 \\ \hline 3|0)8|5 \end{array}$$

The above £120. for 95 days at 5 per cent. by the Rule laid down heretofore, by multiplying by $\frac{1}{3}$ of the principal.

$$\begin{array}{r} 95 \text{ days.} \\ 40 \text{ is } \frac{1}{3} \text{ of £120.} \\ \hline d.380|0 = \text{£}1..11..8 \\ \text{minus } 5\frac{1}{4}d. \text{ Interest } \text{£}1..11..2\frac{3}{4}. \end{array}$$

RULE for Interest at £2. per cent. for days.—Calculate by the Rule for days at 6 per cent. (already given) and take $\frac{1}{3}$ of the amount.

Or, multiply the principal by $\frac{1}{3}$ of the days, or the days by $\frac{1}{3}$ of the principal, and divide by 300, gives the amount without the trouble of going into 6 per cent.

EXAMPLES.

WHAT is the interest of £30. for 30 days?

$$\begin{array}{r} \text{£}30 \\ 10 \text{ is } \frac{1}{3} \text{ of } 30. \\ 3 \overline{)00} \overline{)3} \overline{)00} \\ s.1 \end{array} \text{ Ans. at 2 per cent.}$$

What is the interest of £75. for 84 days, at 2 per cent.?

$$\begin{array}{r} 84 \\ 25 \text{ is } \frac{1}{3} \text{ of } 75. \\ 3 \overline{)00} \overline{)21} \overline{)00} \\ s.7 \end{array} \text{ minus } 1\frac{1}{4}d. \text{ Ans. } 6s. 10\frac{3}{4}d.$$

What is the interest of £95. for 120 days?

$$\begin{array}{r} \text{£}95 \\ 40 \text{ is } \frac{1}{3} \text{ of } 120. \\ 3 \overline{)00} \overline{)38} \overline{)00} \quad 200 \text{ over} = 8d. \\ s.12.. 8 \text{ minus } 2d. \end{array} \text{ Ans. } 12s. 6d.$$

What is the interest of £110. for 99 days?

$$\begin{array}{r} \text{£}110 \\ 33 \\ 3 \overline{)00} \overline{)36} \overline{)30} \quad 30 \text{ over} = 1d. \\ s.12.. 1 \text{ minus } 2d. \end{array} \text{ Ans. } 11s. 11d.$$

What is the interest of £130. for 130 days?

$$\begin{array}{r} \text{£}130 \\ 130 \\ 3 \overline{)00} \overline{)169} \overline{)00} \\ \frac{1}{3} \overline{)56}.. 4 \text{ at 6 per cent.} \\ s.18.. 9\frac{1}{4} \text{ minus } 3d. \end{array} \text{ Ans. } 18s. 6\frac{1}{4}d.$$

What is the interest of £195. for 150 days?

$$\begin{array}{r} \text{£}195 \\ 50 \text{ is } \frac{1}{3} \text{ of } 150. \\ 3 \overline{)00} \overline{)97} \overline{)50} \\ s.32.. 6 \text{ minus } 5\frac{1}{2}d. \end{array} \text{ Ans. } \text{£}1..12..0\frac{1}{2}.$$

What is the interest of £395. for 240 days ?

$$\begin{array}{l} \text{£}395 \\ 80 \text{ is } \frac{1}{3} \text{ of } 240. \end{array}$$

$$3|00)316|00$$

$$s.105.. 4 \text{ minus } 1s. 5\frac{1}{2}d. \text{ Ans. } \text{£}5..3..10\frac{1}{2}.$$

What is the interest of £100. for 365 days ?

365 days.

$$100$$

$$3|00)365|00$$

$$121.. 8$$

£.

$$1.. 8 \text{ minus } = \frac{1}{3})6.. 0.. 0 \text{ at } 6 \text{ per cent.}$$

$$\text{£}2.. 0.. 0 \text{ Proof.}$$

Should Interest at $1\frac{1}{2}$ per cent. for days be required, by taking the quarter of 6 per cent. you have the answer: or if the Interest for days, at 1 per cent. by taking the $\frac{1}{6}$ of 6 per cent. you have the answer: or if it be found necessary to find the Interest for days at $\frac{1}{2}$ per cent. by taking $\frac{1}{12}$ of the amount of the Interest for days at 6 per cent. you have the answer.

As it is necessary in calculating Interest for days, to know the number of days the sum has been at Interest, the following table will be found useful; which shews the number of days, from any day in one month, to the corresponding day in another month, through the year.

To	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
From Jan.	365	31	59	90	120	151	181	212	243	273	304	334
Feb.	334	365	28	59	89	120	150	181	212	242	273	303
Mar.	306	337	365	31	61	92	122	153	184	214	245	275
April	275	306	334	365	30	61	91	122	153	183	214	244
May	245	276	304	335	365	31	61	92	123	153	184	214
June	214	245	273	304	334	365	30	61	92	122	153	183
July	184	215	243	274	304	335	365	31	62	92	123	153
Aug.	153	184	212	243	273	304	334	365	31	61	92	122
Sept.	122	153	181	212	242	273	303	334	365	30	61	91
Oct.	92	123	151	182	212	243	273	304	335	365	31	61
Nov.	61	92	120	151	181	212	242	273	304	334	365	30
Dec.	31	62	90	121	151	182	212	243	274	304	335	365

To find the number of days by the above table. Find

the month in the left-hand column of months, and also the month in the column of months at the top, and see the figures exactly opposite the month in the left-hand column and under the month in the column above, and they give the number of days from the day of the month in the left to the same day of the month in the top column.

Should the end of the month of February in a Leap-year occur, it will be necessary to add one day more to the number discovered by the table.

EXAMPLES.

How many days from the 1st. of April to the 1st. of March?

Here opposite April and under March you find 334, which are the number of days from the 1st. of April to the 1st. of March.

Find the number of days from the 5th. of January to the 5th. of July.

See opposite January and under July the figures are 181, which are the days from the 5th. of January to the 5th. of July.

Find the number of days from the 7th. of May to the 15th. of December.

You find the figures in the column opposite May and under December are 214, which gives the number of days from the 7th. of May to the 7th. of December, but as it is required to know till the 15th. of December you add the difference 8 days, making it 222 days, the answer.

Find the number of days from the 5th. of November to the 3rd. of May.

Here from the 5th. of November to the 5th. of May is found to be (by the table) 181 days, but as it is only required to find to the 3rd. of May, 2 days must be deducted, leaving 179 days, the answer.

How many days from the 4th. of June to the 1st. of December?

By the table it appears to be 183 days from the 4th. of June to the 4th. of December, but the time required

RULE.—Divide the number of years' purchase into £100. and the result will be the per centage at which your money is laid out.

EXAMPLES.

If 13 years' purchase is given for an estate, the rental of which is £100. per annum, what per cent. do I get for my money.

13)£100

£7..13..10 $\frac{2}{3}$ *Ans.* which is nearly $7\frac{3}{4}$ per cent.

If 15 years' purchase is given for £150. per annum, at what rate per cent. is the money laid out?

15)£100

Ans. £6 $\frac{2}{3}$ per cent. and the purchase money is £2250.

If 16 years' purchase money is given for £125. per annum, at what rate per cent. was the purchase?

16)£100

Ans. £6 $\frac{1}{4}$ per cent. and the purchase money is £2000.

If 21 years' purchase money is given for £190. per annum, what per cent. has the purchaser for his money?

21)£100

Ans. £4..15.. 2 $\frac{6}{7}$ per cent. and the purchase money is £3990.

If 28 years' purchase money is given for an estate of £100. per annum, what per cent. has the purchaser for his money?

28)£100

Ans. £3..11.. 5 $\frac{1}{7}$ per cent. and the purchase money is £2800.

To prove the accuracy of the above, multiply the per centage by the number of years' purchase, which gives the annual rent.

In order to find out how money should be laid out in a purchase, so as to ascertain any given rate per cent.

RULE.—Divide the annual rental by the per centage, the quotient will be the number of years' purchase, which number of years' purchase multiplied by 100 gives the whole purchase money.

EXAMPLES.

If the annual rental of an estate be £100. what must I give for it, that I may lay out my money at 4 per cent.?

$$\begin{array}{r}
 4)\text{£}100 \\
 \hline
 25 \quad \text{the number of years' purchase.} \\
 100 \quad \text{the annual rent.} \\
 \hline
 \text{£}2500 \quad \text{the purchase money.}
 \end{array}$$

If the annual rental of an estate be £50. per annum, what number of years' purchase must be given in order to lay out the money at 3 per cent.?

$$\begin{array}{r}
 3)\text{£}50 \\
 \hline
 16\frac{2}{3} \quad \text{the number of years' purchase.} \\
 100 \\
 \hline
 \text{£}1600..13.. 4 \quad \text{the purchase money.}
 \end{array}$$

Suppose the annual rent to be £60. what number of years' purchase must be given, so that the money may be laid out at 2 per cent.?

$$\begin{array}{r}
 2)\text{£}60 \\
 \hline
 30 \quad \text{years' purchase.} \\
 100 \\
 \hline
 \text{£}3000 \quad \text{to be paid for the estate.}
 \end{array}$$

If I purchase an estate, the annual rent of which is £150. how many years' purchase should be given that my money be laid out at $3\frac{1}{2}$ per cent.?

$$\begin{array}{r}
 3\frac{1}{2} \quad \text{£}150 \\
 2 \quad \quad 2 \\
 \hline
 7) \quad 300 \\
 \hline
 42\frac{6}{7} \quad \text{years' purchase.} \\
 100 \\
 \hline
 \text{£}4285\frac{5}{7} \quad \text{to be paid for the estate.}
 \end{array}$$

If the annual rent of an estate be £500. how many years' purchase should be given for it, that $2\frac{1}{2}$ per cent. may be gained by the money laid out?

$$2\frac{1}{2} \ 500\text{£.}$$

$$\begin{array}{r} 2 \quad 2 \\ \hline \end{array}$$

$$5 \overline{)1000}$$

200 years' purchase to be given.

$$\begin{array}{r} 100 \\ \hline \end{array}$$

£20000 the purchase money.

The above calculations prove themselves, by finding what the interest of the purchase money is at the same rate as the above sums are stated.

Thus: The purchase money of the last question is £20000., being at interest at $£2\frac{1}{2}$. per cent. per annum produces £500., being the annual rent of the estate.

To compute in one operation the interest of several sums, advanced at different times, for the account of another person.

Bankers and merchants frequently advance sums of money for their correspondents, the interest whereof they charge on settling accounts with them.

The method of computing and stating an account of Interest, without the assistance of Interest tables.

1st. Find the sums due to you at each date of the account, beginning where you are at first in advance for your correspondent, thus:

The first disbursement, or payment, made by you out of your own cash, is the first sum due; the following sums due, at the several dates, are found by adding the payments made by you, or subtracting the receipts to or from the sum due at the last foregoing date respectively.

2nd. In a line with each sum due, write the days from the date thereof to the date which follows next in order of time, whether the article be a payment or a receipt.

3rd. Multiply each sum due by its respective days, and write the product in the same line, a little farther to the right.

4th. Add the several products, and with the total, as if it were a single product of principal and days, pursue the directions for calculating Interest for days, as laid down just before.

A banker and merchant open an account current the 1st. of January, 1834, the banker advancing the sum of £100. and proceeding as follows :

1834.	£.	<i>Sums due.</i> £.	<i>No. of</i> <i>Days.</i>	<i>Products.</i>
Jan. 1, paid	100	100	× 15	= 1500
..... 16, paid	50	150	× 16	= 2400
Feb. 1, recd.	80	70	× 30	= 2100
Mar. 2, paid	50	120	× 22	= 2640
..... 24, recd.	80	40	× 11	= 440
April 4, acct.	40	3|00)90|80		
				30..3

5 deduct.

£1.. 9..10 at 6 per cent.

If required to be found at 5 per cent. deduct $\frac{1}{8}$ th. from the amount of 6 per cent.

Clearer demonstration of the above calculation.

1834.	<i>Prod.</i>
Jan. 1, due £100.; from the 1st. to the 16th. of Jan. 15 days, multiplied by 100 = 1500	
..... 16, paid £50., with the £100. give £150.; from 16th. Jan. to 1st. Feb. 16 days, multiplied by 150 = 2400	
Feb. 1, recd. £80., deducted from £150. leave £70.; from 1st. Feb. to 2nd. Mar. 30 days, multiplied by 70 = 2100	
Mar. 2, paid £50., with £70. before, give £120.; from the 2nd. to the 24th. of Mar. 22 days, multiplied by 120 = 2640	
..... 24, recd. £80.; deducted from £120. leave £40.; from 24th. March to 4th. of April, 11 days, multiplied by 40 ... = 440	
	9080

The products divided by 300 give 30s. 3d., from which 5d. being deducted, there being 5 times 6s. in 30, leave the answer £1..9..10. at 6 per cent.

Another example of an Interest account, commencing the 15th. of January and ending 4th. of May, 1834, at 6 per cent.

Here we shall give the explanation previous to the form, which, like the former, is divided into five columns. The first contains the dates of the several sums paid or received: the second the sums paid or received on the respective days: the third contains the sums due at each date, which sums are found by adding the payment to the last sum due and by subtracting the receipts from the last sum due respectively: the fourth contains the numbers of the days from the date of the respective articles, to the date next following; and the fifth contains the products of each sum due multiplied by its respective days.

1834.	£.	Days.	Prod.
Jan. 15, adva.	123	from Jan. 15 to 31st.	16 = 1968
31, recd.	75		
	due... 48	from Jan. 31 to Feb. 10,	10 = 480
Feb. 10, paid	90		
	due 138	from Feb. 10 to 22,	12 = 1656
..... 22, paid	47		
	due 185	from Feb. 22 to Mar. 3,	10 = 1850
Mar. 3, recd.	100		
	due... 85	from March 3 to 23,	20 = 1700
..... 23, paid	55		
	due 140	from Mar. 23 to Apr. 4,	12 = 1680
April 4, recd.	100		
	due 40	from Apr. 4 to May 4,	30 = 1200
May 4, recd.	40		3|00)105|34
	...		35.. 1 $\frac{1}{2}$
		deduct	5 $\frac{3}{4}$
May 4. interest due at 6 per cent.	£1..14..		7 $\frac{3}{4}$
At 5 per cent. deduct $\frac{1}{6}$			5.. 9 $\frac{1}{4}$
At 5 per cent.	£1.. 8..		10 $\frac{1}{2}$

1834.	£.	<i>Sums due.</i> £.	<i>No. of</i> Days.	<i>Products.</i>
Jan. 15, paid	123	123	$\times 16 =$	1968
..... 31, recd.	75	48	$\times 10 =$	480
Feb. 10, paid	90	138	$\times 12 =$	1656
..... 22, paid	47	185	$\times 10 =$	1850
Mar. 3, recd.	100	85	$\times 20 =$	1700
..... 23, paid	55	140	$\times 12 =$	1680
April 4, recd.	100	40	$\times 30 =$	1200

3|00)105|34

$\frac{1}{3}$)35.. $1\frac{1}{2}$ at 6 per cent.

11.. $8\frac{1}{2}$ at 2 per cent.

£1.. 3.. 5 at 4 per cent.

By deducting $\frac{1}{3}$ from 6 per cent. you have 4 per cent. and by taking the $\frac{1}{3}$ of 6 you have 2 per cent. observing to take one penny for each six shillings off each amount.

An Interest account at 5 per cent. opened February 4, 1833, and closed November 18, of the same year.

1833.	£.	<i>Sums due.</i> £.	<i>No. of</i> Days.	<i>Products.</i>
Feb. 4, paid	300	300	$\times 25 =$	7500
..... 29, paid	100	400	$\times 10 =$	4000
Mar. 10, recd.	250	150	$\times 20 =$	3000
..... 30, paid	100	250	$\times 13 =$	3250
Apr. 12, recd.	220	30	$\times 54 =$	1620
June 5, paid	450	480	$\times 63 =$	30240
Aug. 7, recd.	300	180	$\times 33 =$	5940
Sept. 9, paid	110	290	$\times 30 =$	8700
Oct. 9, recd.	100	190	$\times 40 =$	7600

£. s. d.

Nov. 18. settled account 7300)71850(9..16..10 *Ans.*

365)6150

2500

3|0)31|0

When the addition of the products is found, the second Rule for Interest of days at £5. per cent. is best applied; that is, dividing by 7300 gives pounds for the quotient; the remainder by 365 gives shillings for the quotient; and that remainder by 30, rejecting any fraction over, gives pence, which pounds, shillings and pence is the answer required, not being subject to

Take the discount off £160..17..8. at $12\frac{1}{2}$ per cent.?

$$\begin{array}{r} 12\frac{1}{2} \text{ of } 100 \text{ is } \frac{1}{8}) \text{£}160..17..8 \\ \underline{20.. 2.. 2\frac{1}{2} \text{ discount.}} \\ \text{£}140..15.. 5\frac{1}{2} \text{ net money.} \end{array}$$

Find the discount on £6580..0..10. at 20 per cent.

$$\begin{array}{r} 20 \text{ of } 100 \text{ is } \frac{1}{5}) \text{£}6580.. 0..10 \\ \underline{1316.. 0.. 2 \text{ discount.}} \\ \text{£}5264.. 0.. 8 \text{ net money.} \end{array}$$

What is the discount on £17..8..2. at 25 per cent.?

$$\begin{array}{r} 25 \text{ of } 100 \text{ is } \frac{1}{4}) \text{£}17.. 8.. 2 \\ \underline{4.. 7.. 0\frac{1}{2} \text{ discount.}} \\ \text{£}13.. 1.. 1\frac{1}{2} \text{ net money.} \end{array}$$

What is the discount on 7s. 10 $\frac{1}{2}$ d. at 50 per cent.?

$$\begin{array}{r} 50 \text{ of } 100 \text{ is } \frac{1}{2}) 7s. 10\frac{1}{2}d. \\ \underline{s.3..11\frac{1}{4} \text{ discount or net money.}} \end{array}$$

Find the discount on £18..9..10. at 75 per cent.

$$\begin{array}{r} 75 \text{ of } 100 \text{ is } \frac{3}{4}) \text{£}18.. 9..10 \\ \underline{4..12.. 5\frac{1}{2} \text{ net money.}} \\ \text{£}13..17.. 4\frac{1}{2} \text{ discount.} \end{array}$$

If the discount to be found is not an even part of 100, divide the sum by 20, the quotient is the discount at 5 per cent. which being multiplied by as many as there are 5 times contained in the discount you wish to find, gives the answer.

EXAMPLES.

TAKE the discount off £325..8..3. at 15 per cent.

$$\begin{array}{r} 20) \text{£}325.. 8.. 3 \\ \underline{16.. 5.. 4\frac{1}{2}\frac{9}{10} \text{ discount at 5 per cent.}} \\ \text{multiply by } \underline{3 \text{ as there are 3 times in 15.}} \\ \text{£}48..16.. 2\frac{1}{2}\frac{7}{10} \text{ or } \frac{3}{4}d. \text{ disc. at 15 per cent.} \end{array}$$

By this method the exact fraction is discovered, which every person is at liberty to follow as they wish.

What is the discount on 4*s.* 10*d.* at 35 per cent.?

$$\begin{array}{r}
 20)4s. 10d. \\
 \hline
 2\frac{9}{10} \text{ at 5 per cent.} \\
 7 \\
 \hline
 s.1.. 8\frac{5}{10} \text{ at 35 per cent.}
 \end{array}$$

Or thus: Multiply the sum on which the discount is to be discovered by as many as there are 5's in the discount to be taken off.* Consider the pounds produced as shillings, and allow for the shillings, if any, the same part of a shilling as they are of a pound.

EXAMPLES.

FIND the discount on £7..8..4. at 15 per cent.

$$\begin{array}{r}
 £7.. 8.. 4 \\
 \quad \quad 3 \\
 \hline
 £22.. 5.. 0
 \end{array}$$

The £22. as shillings = £1..2.
and the 5 in the shillings being $\frac{1}{4}$ of
a £. allow 3*d.* the $\frac{1}{4}$ of a shilling.
Ans. £1..2..3.

Find the discount on £27..3..10. at $17\frac{1}{2}$ per cent.

$$\begin{array}{r}
 £27.. 3..10 \\
 \quad \quad 3\frac{1}{2} \\
 \hline
 81..11.. 6 \\
 13..11..11 \\
 \hline
 £95.. 3.. 5
 \end{array}$$

The £95. as shillings = £4..15.
and as 3*s.* 4*d.* is just $\frac{1}{8}$ of a pound,
allow the $\frac{1}{6}$ of a shilling = 2*d.*
Ans. £4..15..2.

Find the discount on £150..14..2. at $31\frac{1}{4}$ per cent.

$$\begin{array}{r}
 £150..14.. 2 \\
 \quad \quad 6\frac{1}{4} \\
 \hline
 904.. 5.. 0 \\
 37..13.. 6\frac{1}{2} \\
 \hline
 £941..18.. 6\frac{1}{2}
 \end{array}$$

This $31\frac{1}{4}$ contains $6\frac{1}{4}$ times 5,
and the £941. produced as shil-
lings, £47..1. and the proportion
that the 18*s.* $6\frac{1}{2}$ *d.* bears to a £. is
the same, or a little better, than
that 11*d.* bears to a shilling.
Ans. £47..1..11. at $31\frac{1}{4}$ per cent.

* That is, if the discount to be found is 15 per cent., multiply by 3, as there are 3 5's in 15.

The following Table of discounts will be found useful.

p cent.	is	in the £.	p cent.	is	in the £.	p cent.	is	in the £.
$\frac{1}{5}$	is	0s. 0 $\frac{5}{10}$ d.	16 $\frac{1}{4}$	is	3s. 3d.	37 $\frac{1}{2}$	is	7s. 6d.
$\frac{1}{4}$	is	0 0 $\frac{3}{5}$	17 $\frac{1}{2}$	is	3 6	38 $\frac{3}{4}$	is	7 9
$\frac{1}{3}$	is	0 1 $\frac{1}{5}$	18 $\frac{3}{4}$	is	3 9	40	is	8 0
$\frac{3}{4}$	is	0 1 $\frac{4}{5}$	20	is	4 0	41 $\frac{1}{4}$	is	8 3
1	is	0 2 $\frac{2}{5}$	21 $\frac{1}{4}$	is	4 3	42 $\frac{1}{2}$	is	8 6
1 $\frac{1}{4}$	is	0 3	22 $\frac{1}{2}$	is	4 6	43 $\frac{3}{4}$	is	8 9
2 $\frac{1}{2}$	is	0 6	23 $\frac{3}{4}$	is	4 9	45	is	9 0
3 $\frac{3}{4}$	is	0 9	25	is	5 0	46 $\frac{1}{4}$	is	9 3
5	is	1 0	26 $\frac{1}{4}$	is	5 3	47 $\frac{1}{2}$	is	9 6
6 $\frac{1}{4}$	is	1 3	27 $\frac{1}{2}$	is	5 6	48 $\frac{3}{4}$	is	9 9
7 $\frac{1}{2}$	is	1 6	28 $\frac{3}{4}$	is	5 9	50	is	10 0
8 $\frac{3}{4}$	is	1 9	30	is	6 0	55	is	11 0
10	is	2 0	31 $\frac{1}{4}$	is	6 3	60	is	12 0
11 $\frac{1}{4}$	is	2 3	32 $\frac{1}{2}$	is	6 6	65	is	13 0
12 $\frac{1}{2}$	is	2 6	33 $\frac{3}{4}$	is	6 9	70	is	14 0
13 $\frac{3}{4}$	is	2 9	35	is	7 0	75	is	15 0
15	is	3 0	36 $\frac{1}{4}$	is	7 3	80	is	16 0

By the foregoing table the discount may be found by finding first at 5 per cent. and multiplying as the case may require.

What is the discount on £125. at 30 per cent.?

£6.. 5 at 5 per cent.
6

£37..10 at 30 per cent.

What is the discount on £28..10. at 45 per cent.?

£1.. 8.. 6 at 5 per cent.
9

£12..16.. 6 at 45 per cent.

What is the discount on £128..2..6. at 70 per cent.?

£6.. 8.. 1 $\frac{1}{2}$ at 5 per cent.
14

£89..13.. 9 at 70 per cent.

By the above rules and examples, calculations may be made to any extent.

BRITISH AND FRENCH CURRENCY.

WE are indebted to a gentleman, who has resided a considerable time in France, for the following short method of bringing French currency into British, and British currency into French currency or francs.

RULE to bring francs into British pounds sterling.—Cut off the last two figures and multiply the remainder by 4, the product will be the answer in pounds.

Note, 25 francs are £1. British.

EXAMPLES.

IN 2500 francs how many pounds sterling?

25|00 francs.

4

Ans. £100 British.

IN 2600 francs how many pounds?

26|00 francs.

4

Ans. £104 British.

IN 2720 francs how many pounds?

27|20 francs

4

£108 and 20 francs over = £108..16. *Ans.*

IN 810 francs how many pounds?

8|10 francs.

4

£32 and 10 francs over = £32..8. *Ans.*

IN 3500 francs how many pounds?

35|00 francs.

4

£140 British. *Ans.*

IN 5624 francs how many pounds?

56|24 francs.

4

£224 and 24 francs = £224..19..2½. *Ans.*

In 1805 francs how many pounds?

18|05 francs.

4

$\overline{\text{£}72}$ and 5 francs = $\text{£}72..4$. *Ans.*

A franc being $9\frac{2}{5}d$. English, 5 must be 4s.

In 2026 francs how many pounds?

20|26 francs.

4

$\overline{\text{£}80}$ and 26 francs.

26 francs = 1.. 0.. $9\frac{2}{5}$

$\overline{\text{£}81.. 0.. 9\frac{2}{5}}$ English. *Ans.*

In 20000 francs how many pounds?

200|00 francs.

4

$\overline{\text{£}800}$ British. *Ans.*

In 1000000 francs how many pounds?

10000|00 francs.

4

$\overline{\text{£}40000}$ British. *Ans.*

To bring British pounds to francs. RULE.—Divide by 4 and add two ciphers.

EXAMPLES.

In $\text{£}100$. British how many francs?

4) $\overline{\text{£}100}$

2500 francs. *Ans.*

In $\text{£}104$. how many francs?

4) $\overline{\text{£}104}$

2600 francs. *Ans.*

In $\text{£}32..8$. how many francs?

4) $\overline{\text{£}32.. 8}$

800 francs.

8s. over = 10 francs.

$\overline{810}$ francs. *Ans.*

In $\text{£}140$. how many francs?

4) $\overline{\text{£}140}$

3500 francs. *Ans.*

In £224..19..2 $\frac{2}{5}$. how many francs?

$$\begin{array}{r} 4) \text{£}224 \\ \hline 5600 \\ 19\text{s. } 2\frac{2}{5}d. = 24 \text{ francs.} \\ \hline 5624 \text{ francs. } \textit{Ans.} \end{array}$$

In £72..4. how many francs?

$$\begin{array}{r} 4) \text{£}72.. 4 \\ \hline 1800 \\ 4\text{s.} = 5 \text{ francs.} \\ \hline 1805 \text{ francs. } \textit{Ans.} \end{array}$$

In £81..0..9 $\frac{3}{5}$. how many francs?

$$\begin{array}{r} 4) \text{£}81.. 0.. 9\frac{3}{5} \\ \hline 2000 \\ \text{£}1..0..9\frac{3}{5} = 26 \text{ francs.} \\ \hline 2026 \text{ francs. } \textit{Ans.} \end{array}$$

In £800. British how many francs?

$$\begin{array}{r} 4) \text{£}800 \\ \hline 20000 \text{ francs. } \textit{Ans.} \end{array}$$

In £40000. how many francs?

$$\begin{array}{r} 4) \text{£}40000 \\ \hline 1000000 \text{ francs. } \textit{Ans.} \end{array}$$

It will be seen, by inspecting the foregoing calculations, that each of these Rules has been proved by the other.

A SHORT method for bringing boards, &c. &c. of various lengths, breadths, and thickness into feet.

RULE.—Consider the feet as pence, which reduce to shillings, or shillings and pence (mentally) which multiply by the inches.

EXAMPLES.

IN a board 24 *ft.* long and 11 *in.* broad, how many feet?

$$\begin{array}{r} 24 \text{ ft. as } 24d. = 2\text{s.} \\ 11 \\ \hline 22 \text{ feet. } \textit{Ans.} \end{array}$$

A board 16 *ft.* long, 10 *in.* broad and 1 *in.* thick, how many feet?

$$\begin{array}{r} 1 \text{ ft. } 4 \text{ in.} \\ 10 \\ \hline \text{ft. } 13.. 4 \text{ in.} \quad \text{Ans.} \end{array}$$

A board of $23\frac{1}{2}$ *ft.* long, 11 *in.* broad and 1 *in.* thick, how many feet?

$$\begin{array}{r} 1 \text{ ft. } 11\frac{1}{2} \text{ in.} \\ 11 \\ \hline \text{ft. } 21.. 6\frac{1}{2} \text{ in.} \quad \text{Ans.} \end{array}$$

A board $29\frac{3}{4}$ *ft.* long, 8 *in.* broad and 1 *in.* thick, how many feet?

$$\begin{array}{r} 2 \text{ ft. } 5\frac{3}{4} \text{ in.} \\ 8 \\ \hline \text{ft. } 19.. 10 \text{ in.} \quad \text{Ans.} \end{array}$$

A plank measuring 30 *ft.* long, 9 *in.* broad and 2 *in.* thick, how many feet?

$$\begin{array}{r} 2 \text{ ft. } 6 \text{ in.} \\ 9 \\ \hline \text{ft. } 22.. 6 \text{ in. if 1 inch thick.} \\ 2 \\ \hline \text{ft. } 45.. 0 \text{ in.} \quad \text{Ans.} \end{array}$$

Three planks, 29 *ft.* long each, $7\frac{1}{2}$ *in.* broad and 2 *in.* thick, how many feet?

$$\begin{array}{r} 7 \text{ ft. } 3 \text{ in.} \\ 15 \\ \hline \text{ft. } 108 \quad 9 \text{ in.} \quad \text{Ans.} \end{array}$$

The thickness being 2 *in.* I multiply by 15 in preference to $7\frac{1}{2}$ first, and that product by 2.

Four planks, each 15 *ft.* long, $9\frac{1}{2}$ *in.* broad and 3 *in.* thick, how many feet?

$$\begin{array}{r} 5 \text{ ft.} \\ 9\frac{1}{2} \\ \hline 47\frac{1}{2} \\ 3 \\ \hline \text{ft. } 142\frac{1}{2} \quad \text{Ans.} \end{array}$$

MENTAL CALCULATIONS.

IN calculating mentally the same method is to be adopted as when the figures are employed; that is, when the price is pence.

RULE.—Find the amount at one penny, and multiply by the price, which we shall illustrate by the following

EXAMPLES.

WHAT would 24 *lbs.* cost at 2*d.* per *lb.*?

Say, mentally, 24 at 1*d.* = 2*s.*

multiply by the price 2*d.*

4*s.* *Ans.*

What would 24 yards cost at 5*d.* per yard?

Say, 24 at 1*d.* amount to 2*s.*

multiply by the price 5*d.*

10*s.* *Ans.*

What would 36 gallons cost at 4*d.* per gallon?

36 at 1*d.* amount to 3*s.*

multiplied by 4*d.* the price.

12*s.* *Ans.*

What would 48 yards cost at 7*d.* per yard?

48 at 1*d.* amount to 4*s.*

multiply by 7*d.* the price.

£1.. 8 *Ans.*

What would 48 *lbs.* cost at 8*d.* per *lb.*?

48 at 1*d.* amount to 4*s.*

multiply by 8*d.* the price.

£1..12 *Ans.*

What would 48 stones cost at 9*d.* per stone?

48 at 1*d.* amount to 4*s.*

multiply by 9*d.* the price.

£1..16 *Ans.*

What would 48 *lbs.* cost at 10*d.* per *lb.*?

48 at 1*d.* amount to 4*s.*

multiply by 10*d.* the price.

£2.. 0 *Ans.*

What would 60 gallons cost at 11*d.* per gallon?

60 at 1*d.* amount to 5*s.*

multiply by 11*d.* the price.

£2..15 Ans.

What would 60 articles cost at 3*d.* each?

60 at 1*d.* amount to 5*s.*

multiply by 3*d.* the price.

15*s.* Ans.

What would 72 yards come to at 7*d.* per yard?

72 at 1*d.* amount to 6*s.*

multiply by 7*d.* the price.

£2.. 2 Ans.

What would 72 *lbs.* cost at 9*d.* per *lb.*?

72 at 1*d.* amount to 6*s.*

multiply by 9*d.* the price.

£2..14 Ans.

What would 72 articles cost at 11*d.* each?

72 articles at 1*d.* amount to 6*s.*

multiply by 11*d.* the price.

£3.. 6 Ans.

What would 84 gallons cost at 3*d.* each?

84 at 1*d.* amount to 7*s.*

multiply by 3*d.* the price.

£1.. 1 Ans.

What would 84 yards cost at 4*d.* per yard?

84 at 1*d.* amount to 7*s.*

multiply by 4*d.* the price.

£1.. 8 Ans.

What would 84 ounces cost at 5*d.* per ounce?

84 ounces at 1*d.* amount to 7*s.*

multiply by 5*d.* the price.

£1..15 Ans.

What would 84 ounces cost at 6*d.* per ounce?

84 ounces cost at 1*d.* amount to 7*s.*

multiply by 6*d.* the price.

£2.. 2 Ans.

What will 96 gallons come to at 7*d.* per gallon?

96 gallons at 1*d.* amount to 8*s.*

multiply by 7*d.* the price.

£2..16 Ans.

Note, Should $\frac{1}{2}$ *d.* occur in the price when calculating mentally, take $\frac{1}{2}$ of what it comes to at 1*d.*, which add in as the following

EXAMPLES.

SUPPOSE 48 *lbs.* at $5\frac{1}{2}$ *d.* per *lb.*

48 *lbs.* at 1*d.* amount to 4*s.*

multiply by $5\frac{1}{2}$

£1.. 2 Ans.

Here we say 48 yards or *lbs.* &c. at 1*d.* amount to 4*s.* being multiplied by 5 gives 20 shillings, the price at 5 pence, and the half of 4*s.* (what it comes to at 1*d.*) being 2, what it comes to at $\frac{1}{2}$ *d.* by adding both you have the amount at $5\frac{1}{2}$ *d.*

What would 72 yards cost at $6\frac{1}{2}$ *d.* per yard?

72 yards at 1*d.* = 6*s.*

multiply by $6\frac{1}{2}$

£1..19 Ans.

What will 96 yards cost at $7\frac{1}{2}$ *d.* per yard?

96 yards at 1*d.* amount to 8*s.*

multiply by $7\frac{1}{2}$

s.60 Ans.

What would 120 gallons cost at $10\frac{1}{2}$ *d.* per gallon?

120 gallons at 1*d.* amount to 10*s.*

multiply by $10\frac{1}{2}$

£5.. 5 Ans.

Note, Should $\frac{1}{4}$ *d.* occur in the price when calculating

mentally, take $\frac{1}{4}$ th. of what it comes to at 1*d.* which add in as the following

EXAMPLES.

WHAT would 96 ounces cost at $8\frac{1}{4}$ *d.* per ounce?

96 at 1*d.* amount to 8*s.*

multiply by $8\frac{1}{4}$

$\text{£}3.. 6$ Ans.

Here we say 96 at 1*d.* comes to 8*s.* which being multiplied by the 8 gives 64 shillings, and the quarter of 8 shillings being 2, what it comes to at $\frac{1}{4}$ *d.* gives 66 shillings or $\text{£}3. 6*s.*$ the price at $8\frac{1}{4}$ *d.*

What would 108 ounces cost at $9\frac{1}{4}$ *d.* per ounce?

108 ounces at 1*d.* amount to 9*s.*

multiply by $9\frac{1}{4}$

$\text{£}4.. 3.. 3$ Ans.

What would 120 gallons cost at $10\frac{1}{4}$ *d.* per gallon?

120 gallons at 1*d.* amount to 10*s.*

multiply by $10\frac{1}{4}$

$\text{£}5.. 2.. 6$ Ans.

Note, Should $\frac{3}{4}$ *d.* occur in the price when calculating mentally, take 3 quarters of what it comes to at 1*d.* which add as in the following

EXAMPLES.

SUPPOSE 96 gallons at $2\frac{3}{4}$ *d.* per gallon.

96 gallons at 1*d.* amount to 8*s.*

multiply by $2\frac{3}{4}$

$\text{£}1.. 2$ Ans.

Note, In this question 96 at 1*d.* amount to 8*s.* which being multiplied by 2, gives 16*s.* then the 3 quarters of 8 shillings being 6, which you add (being the price at 3 farthings) it gives 22 shillings, the amount of 96 at $2\frac{3}{4}$ *d.*

What will 144 *lbs.* cost at $5\frac{3}{4}$ *d.* per *lb.*?

144 *lbs.* at 1*d.* amount to 12*s.*

multiply by $5\frac{3}{4}$

$\text{£}3.. 9.. 0$ Ans.

What will 84 gallons cost at $7\frac{1}{4}d.$ per gallon?

84 at $1d.$ amount to $7s.$

multiply by $7\frac{1}{4}$

$\pounds 2..10.. 9$ Ans.

What will 132 ounces cost at $10\frac{1}{2}d.$ per ounce?

132 at $1d.$ amount to $11s.$

multiply by $10\frac{1}{2}$

$\pounds 5..15.. 6$ Ans.

Suppose 108 yards at $10\frac{3}{4}d.$ per yard?

108 at $1d.$ amount to $9s.$

multiply by $10\frac{3}{4}$

$\pounds 4..16.. 9$ Ans.

Having given many examples in Mental Calculations, with explanatory notes, we think a table of that description may be acceptable to Principals of Seminaries, as also the Heads of Families to exercise the young Pupil in, they being calculated to strengthen the memory, and much facilitate their power of solving Questions in the mind.

Table of Calculations to be answered Mentally.

<i>per yd.</i>			<i>Answers.</i>			<i>per lb.</i>			<i>Answers.</i>		
<i>yds.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>	<i>lbs.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>
24 at	0	3	0	6	0	36 at	0	9	1	7	0
24 at	0	4	0	8	0	36 at	0	10	1	10	0
24 at	0	5	0	10	0	36 at	0	11	1	13	0
24 at	0	6	0	12	0						
24 at	0	7	0	14	0	<i>gals.</i>	<i>per gal.</i>				
24 at	0	8	0	16	0	37 at	0	1	0	3	1
24 at	0	9	0	18	0	37 at	0	2	0	6	2
24 at	0	10	1	0	0	37 at	0	3	0	9	3
24 at	0	11	1	2	0	37 at	0	4	0	12	4
<i>lbs.</i>	<i>per lb.</i>					37 at	0	5	0	15	5
36 at	0	3	0	9	0	37 at	0	6	0	18	6
36 at	0	4	0	12	0	37 at	0	7	1	1	7
36 at	0	5	0	15	0	37 at	0	8	1	4	8
36 at	0	6	0	18	0	37 at	0	9	1	7	9
36 at	0	7	1	1	0	37 at	0	10	1	10	10
36 at	0	8	1	4	0	37 at	0	11	1	13	11

In the following table a halfpenny is introduced in the price.

						<i>per gal.</i>			<i>Answers.</i>		
						<i>gals.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>
						72 at	0	1	0	6	0
						72 at	0	3	0	18	0
						72 at	0	3½	1	1	0
						72 at	0	4	1	4	0
						72 at	0	4¼	1	5	6
						72 at	0	5½	1	13	0
						72 at	0	6¼	1	17	6
						72 at	0	7½	2	5	0
						72 at	0	8¼	2	9	6
						72 at	0	9½	2	17	0
						72 at	0	10	3	0	0
						72 at	0	10¼	3	1	6
						72 at	0	10½	3	3	0
						72 at	0	11	3	6	0
						72 at	0	11¼	3	7	6
						72 at	0	11½	3	9	0
						<i>stones. per stone.</i>					
						84 at	0	1	0	7	0
						84 at	0	3	1	1	0
						84 at	0	3½	1	4	6
						84 at	0	4	1	8	0
						84 at	0	4½	1	11	6
						84 at	0	5	1	15	0
						84 at	0	5½	1	18	6
						84 at	0	6	2	2	0
						84 at	0	6¼	2	3	9
						84 at	0	6½	2	5	6
						84 at	0	7	2	9	0
						84 at	0	7½	2	12	6
						84 at	0	8¼	2	17	9
						84 at	0	9	3	3	0
						84 at	0	9½	3	6	6
						84 at	0	10	3	10	0
						84 at	0	10½	3	13	6
						84 at	0	11	3	17	0
						84 at	0	11½	4	0	6
						<i>oz. per oz.</i>					
						96 at	0	1	0	8	0
						96 at	0	3	1	4	0
						96 at	0	3¼	1	6	0
						96 at	0	3½	1	8	0

			<i>per oz.</i>			<i>Answers.</i>						<i>per lb.</i>			<i>Answers.</i>		
<i>oz.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>	<i>lbs.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>
96 at	0	3 $\frac{3}{4}$	1	10	0				120 at	0	4 $\frac{1}{4}$	2	2	6			
96 at	0	4 $\frac{1}{4}$	1	14	0				120 at	0	5	2	10	0			
96 at	0	5 $\frac{3}{4}$	2	6	0				120 at	0	5 $\frac{1}{4}$	2	12	6			
96 at	0	6 $\frac{1}{4}$	2	10	0				120 at	0	6 $\frac{1}{2}$	3	5	0			
96 at	0	6 $\frac{3}{4}$	2	12	0				120 at	0	6 $\frac{3}{4}$	3	7	6			
96 at	0	7 $\frac{1}{4}$	2	14	0				120 at	0	7	3	10	0			
96 at	0	7 $\frac{1}{2}$	2	18	0				120 at	0	7 $\frac{1}{4}$	3	12	6			
96 at	0	8 $\frac{3}{4}$	3	0	0				120 at	0	7 $\frac{1}{2}$	3	15	0			
96 at	0	9	3	10	0				120 at	0	7 $\frac{3}{4}$	3	17	6			
96 at	0	9 $\frac{1}{4}$	3	12	0				120 at	0	8	4	0	0			
96 at	0	9 $\frac{3}{4}$	3	14	0				120 at	0	8 $\frac{1}{4}$	4	2	6			
96 at	0	10 $\frac{1}{4}$	3	18	0				120 at	0	8 $\frac{1}{2}$	4	5	0			
96 at	0	10 $\frac{3}{4}$	4	2	0				120 at	0	8 $\frac{3}{4}$	4	7	6			
96 at	0	11	4	6	0				120 at	0	9	4	10	0			
96 at	0	11 $\frac{1}{2}$	4	8	0				120 at	0	9 $\frac{1}{2}$	4	15	0			
96 at	0	11 $\frac{3}{4}$	4	12	0				120 at	0	10 $\frac{3}{4}$	5	7	6			
96 at	0	12	4	14	0				120 at	0	11	5	10	0			
108 at	0	1	0	9	0				120 at	0	11 $\frac{1}{2}$	5	15	0			
108 at	0	3	1	7	0				132 at	0	1	0	11	0			
108 at	0	3 $\frac{1}{2}$	1	11	6				132 at	0	3	1	13	0			
108 at	0	4 $\frac{1}{4}$	1	18	3				132 at	0	3 $\frac{1}{2}$	1	18	6			
108 at	0	5 $\frac{1}{2}$	2	9	6				132 at	0	3 $\frac{3}{4}$	2	1	3			
108 at	0	6	2	14	0				132 at	0	4	2	4	0			
108 at	0	6 $\frac{1}{4}$	2	16	3				132 at	0	4 $\frac{1}{4}$	2	6	9			
108 at	0	7 $\frac{1}{2}$	3	7	6				132 at	0	5	2	15	0			
108 at	0	8 $\frac{3}{4}$	3	18	9				132 at	0	5 $\frac{1}{2}$	3	0	6			
108 at	0	9	4	1	0				132 at	0	5 $\frac{3}{4}$	3	3	3			
108 at	0	9 $\frac{1}{2}$	4	5	6				132 at	0	7	3	17	0			
108 at	0	10	4	10	0				132 at	0	7 $\frac{1}{4}$	3	19	9			
108 at	0	10 $\frac{1}{2}$	4	14	6				132 at	0	8 $\frac{1}{2}$	4	13	6			
108 at	0	10 $\frac{3}{4}$	4	16	9				132 at	0	9	4	19	0			
108 at	0	11	4	19	0				132 at	0	9 $\frac{1}{4}$	5	1	9			
108 at	0	11 $\frac{1}{2}$	5	3	6				132 at	0	10	5	10	0			
120 at	0	1	0	10	0				132 at	0	10 $\frac{3}{4}$	5	18	3			
120 at	0	3	1	10	0				132 at	0	11	6	1	0			
120 at	0	3 $\frac{1}{4}$	1	12	6				132 at	0	11 $\frac{1}{2}$	6	6	6			
120 at	0	3 $\frac{1}{2}$	1	15	0				<i>oz.</i>	<i>per oz.</i>							
120 at	0	3 $\frac{3}{4}$	1	17	6				144 at	0	1	0	12	0			
120 at	0	4	2	0	0				144 at	0	3	1	16	0			
									144 at	0	3 $\frac{1}{4}$	1	19	0			

<i>lbs.</i>	<i>per lb.</i>		<i>Answers.</i>			<i>oz.</i>	<i>per oz.</i>
	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>		
144 at	0	$3\frac{1}{2}$	2	2	0	37 at	5
144 at	0	$3\frac{3}{4}$	2	5	0	40 at	6
144 at	0	4	2	8	0	48 at	$6\frac{1}{2}$
144 at	0	$4\frac{1}{2}$	2	14	0	60 at	$7\frac{1}{4}$
144 at	0	$4\frac{3}{4}$	2	17	0	72 at	$7\frac{3}{4}$
144 at	0	5	3	0	0	84 at	$8\frac{1}{2}$
144 at	0	$5\frac{1}{4}$	3	3	0	90 at	10
144 at	0	$5\frac{1}{2}$	3	6	0	96 at	$10\frac{3}{4}$
144 at	0	$5\frac{3}{4}$	3	9	0	100 at	4
144 at	0	7	4	4	0	102 at	9
144 at	0	$7\frac{1}{4}$	4	7	0	120 at	$3\frac{1}{2}$
144 at	0	$7\frac{1}{2}$	4	10	0	124 at	4
144 at	0	$7\frac{3}{4}$	4	13	0	126 at	6
144 at	0	8	4	16	0	132 at	$8\frac{1}{2}$
144 at	0	$8\frac{1}{4}$	4	19	0	144 at	$9\frac{1}{4}$
144 at	0	$9\frac{1}{2}$	5	14	0	25 at	8
144 at	0	$10\frac{3}{4}$	6	9	0	16 at	3
144 at	0	11	6	12	0	26 at	9
144 at	0	$11\frac{3}{4}$	7	1	0	30 at	10
						40 at	11

The foregoing tables have been inserted, to give Teachers and Parents an opportunity of interrogating youth of both sexes, in Mental Calculations, and from the explanations given, we flatter ourselves they can be done with ease to all parties. The Answers are not to be got by rote, but should be given from a knowledge of the method, for which reason answers have not been attached to the last column.

Having laid down a variety of calculations from 1 penny to $11\frac{3}{4}d.$ we shall now introduce some calculations *to be solved Mentally*, where the price is shillings.

Shillings and 3 pence.

Shillings and 6 pence.

Shillings and 9 pence.

<i>yds.</i>	<i>per yd.</i>		<i>Answers.</i>			<i>yds.</i>	<i>per yd.</i>		<i>Answers.</i>		
	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>
60 at	1	0	3	0	0	60 at	6	0	18	0	0
60 at	2	0	6	0	0	60 at	7	0	21	0	0
60 at	3	0	9	0	0	60 at	8	0	24	0	0
60 at	4	0	12	0	0	60 at	9	0	27	0	0
60 at	5	0	15	0	0	60 at	10	0	30	0	0

<i>per yd.</i>			<i>Answers.</i>			<i>per yd.</i>			<i>Answers.</i>		
<i>yds.</i>	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>	<i>yds.</i>	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>
60 at	11	0	33	0	0	100 at	5	0	25	0	0
60 at	12	0	36	0	0	100 at	5	6	27	10	0
						100 at	6	0	30	0	0
80 at	1	0	4	0	0	100 at	6	1	30	8	4
80 at	3	0	12	0	0	100 at	6	3	31	5	0
*80 at	3	3	13	0	0	100 at	7	0	35	0	0
80 at	3	6	14	0	0	100 at	8	3	41	5	0
80 at	4	0	16	0	0	100 at	8	6	42	10	0
80 at	4	3	17	0	0	100 at	9	1	45	8	4
80 at	4	6	18	0	0	100 at	10	2	50	16	8
80 at	4	9	19	0	0	100 at	10	6	52	10	0
80 at	5	0	20	0	0	100 at	11	3	56	5	0
80 at	5	3	21	0	0	100 at	12	0	60	0	0
80 at	5	6	22	0	0	100 at	12	2	60	16	8
80 at	5	9	23	0	0	100 at	12	9	63	15	0
80 at	6	0	24	0	0						
80 at	6	3	25	0	0	120 at	3	0	18	0	0
80 at	6	6	26	0	0	120 at	3	6	21	0	0
80 at	6	9	27	0	0	120 at	4	3	25	10	0
80 at	7	0	28	0	0	120 at	4	9	28	10	0
80 at	7	3	29	0	0	120 at	5	0	30	0	0
80 at	8	6	34	0	0	120 at	5	3	31	10	0
80 at	9	0	36	0	0	120 at	6	6	39	0	0
80 at	10	9	43	0	0	120 at	7	0	42	0	0
80 at	11	0	44	0	0	120 at	7	3	43	10	0
80 at	11	6	46	0	0	120 at	8	9	52	10	0
80 at	12	0	48	0	0	120 at	9	0	54	0	0
						120 at	9	3	55	10	0
100 at	3	0	15	0	0	120 at	10	9	64	10	0
100 at	3	6	17	10	0	120 at	11	1	66	10	0
100 at	4	0	20	0	0	120 at	11	6	69	0	0
100 at	4	1	20	8	4	120 at	12	0	72	0	0
In the above, the 100 at 1s. is £5. at 4s. amount to £20. in addition to which 100 at 1d. = 8s. 4d. give £20..8..4.						120 at	12	6	75	0	0
						130 at	1	0	6	10	0
						130 at	3	0	19	10	0
						130 at	4	0	26	0	0

* Here 80 at 1s. = £4.
multiplied by $3\frac{1}{4}$
gives the *Ans.* £13.

<i>per yd.</i>			<i>Answers.</i>			<i>per yd.</i>			<i>Answers.</i>		
<i>yds.</i>	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>	<i>yds.</i>	<i>s.</i>	<i>d.</i>	£.	<i>s.</i>	<i>d.</i>
130 at	5	0	32	10	0	160 at	6	9	54	0	0
130 at	6	0	39	0	0	160 at	7	0	56	0	0
130 at	7	0	45	10	0	160 at	7	1	56	13	4
130 at	8	0	52	0	0	160 at	7	3	58	0	0
130 at	9	0	58	10	0	160 at	7	6	60	0	0
130 at	10	0	65	0	0	160 at	9	9	78	0	0
130 at	11	0	71	10	0	160 at	10	3	82	0	0
130 at	12	0	78	0	0	160 at	10	6	84	0	0
						160 at	10	9	86	0	0
140 at	3	0	21	0	0	160 at	11	0	88	0	0
140 at	3	6	24	10	0	160 at	11	1	88	13	4
140 at	4	0	28	0	0	160 at	11	3	90	0	0
140 at	4	3	29	15	0	160 at	11	6	92	0	0
140 at	4	6	31	10	0	160 at	11	9	94	0	0
140 at	5	3	36	15	0	160 at	12	0	96	0	0
140 at	6	6	45	10	0	160 at	12	3	98	0	0
140 at	7	3	50	15	0						
140 at	8	0	56	0	0	180 at	3	0	27	0	0
140 at	8	1	56	11	8	180 at	3	6	31	10	0
140 at	8	6	59	10	0	180 at	3	9	33	15	0
140 at	9	0	63	0	0	180 at	4	0	36	0	0
140 at	9	1	63	11	8	180 at	4	1	36	15	0
140 at	9	3	64	15	0	180 at	4	2	37	10	0
140 at	9	6	66	10	0	180 at	4	3	38	5	0
140 at	10	3	71	15	0	180 at	4	6	40	10	0
140 at	10	9	75	5	0	180 at	5	0	45	0	0
140 at	11	0	77	0	0	180 at	5	3	47	5	0
140 at	11	1	77	11	8	180 at	5	6	49	10	0
140 at	11	6	80	10	0	180 at	6	9	60	15	0
140 at	12	0	84	0	0	180 at	7	0	63	0	0
140 at	12	6	87	10	0	180 at	7	3	65	5	0
						180 at	7	6	67	10	0
160 at	3	0	24	0	0	180 at	7	9	69	15	0
160 at	3	6	28	0	0	180 at	8	0	72	0	0
160 at	4	0	32	0	0	180 at	8	1	72	15	0
160 at	4	1	32	13	4	180 at	8	3	74	5	0
160 at	4	3	34	0	0	180 at	9	0	81	0	0
160 at	4	6	36	0	0	180 at	9	6	85	10	0
160 at	4	9	38	0	0	180 at	10	3	92	5	0
160 at	5	0	40	0	0	180 at	11	0	99	0	0
160 at	5	3	42	0	0	180 at	11	6	103	10	0

<i>per yd.</i>			<i>Answers.</i>			<i>per yd.</i>			<i>Answers.</i>		
<i>yds.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>	<i>yds.</i>	<i>s.</i>	<i>d.</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>
180 at	12	0	108	0	0	200 at	11	6	115	0	0
						200 at	12	0	120	0	0
						200 at	12	6	125	0	0
200 at	3	0	30	0	0						
200 at	3	3	32	10	0						
200 at	3	6	35	0	0	61 at	3	0			
200 at	3	9	37	10	0	65 at	4	0			
200 at	4	3	42	10	0	80 at	4	3			
200 at	4	6	45	0	0	80 at	5	1			
200 at	4	9	47	10	0	100 at	7	9			
200 at	5	0	50	0	0	126 at	9	0			
200 at	5	1	50	16	8	140 at	9	6			
200 at	5	6	55	0	0	150 at	10	0			
200 at	6	0	60	0	0	163 at	11	0			
200 at	6	3	62	10	0	180 at	11	1			
200 at	6	6	65	0	0	180 at	11	6			
200 at	7	0	70	0	0	200 at	11	9			
200 at	7	9	77	10	0	24 at	3	0			
200 at	8	6	85	0	0	62 at	7	0			
200 at	9	3	92	10	0	68 at	9	0			
200 at	9	6	95	0	0	104 at	11	0			
200 at	9	9	97	10	0	240 at	3	6			
200 at	10	1	100	16	8	242 at	9	0			
200 at	11	0	110	0	0	17 at	3	0			

Having given extensive lists of Mental Calculations, with the answers annexed, that persons wishing it can improve themselves ; and also, that Principals of Seminaries, or Heads of Families, can adopt the method, employed by the authors, in exercising their Pupils in calculations of the same description : a few have been added, where the price is both shillings and pence, without the answers, which can be solved with the same ease as those to which the answers are attached.

We shall now add some questions to exercise all the foregoing Rules ; only a few of which shall be worked in full.

EXAMPLES.

WHAT would 26 yards cost at 5*d.* per yard?

Ans. 10*s.* 10*d.*

What will 34½ *lbs.* cost at 7*d.* per *lb.*? *Ans.* £1..0..1½.

What will $55\frac{1}{4}$ gallons cost at $8d.$ per gallon?

Ans. £1..16..10.

What will $126\frac{3}{4}$ stone cost at $9d.$ per stone?

Ans. £4..15..0 $\frac{3}{4}$.

What will $148\frac{1}{8}$ ounces cost at $10d.$ per ounce?

Ans. £6..3..5 $\frac{1}{4}$.

What will 96 yards cost at $7\frac{1}{4}d.$ per yard?

Ans. £2..18..0.

What will 108 *lbs.* cost at $8\frac{1}{2}d.$ per *lb.*? *Ans.* £3..16..6.

What will 240 gallons cost at $9\frac{3}{4}d.$ per gallon?

Ans. £9..15..0.

What will 960 yards cost at $10\frac{3}{8}d.$ per yard?

Ans. £41..10..0.

What will $152\frac{1}{2}$ *lbs.* cost at $8\frac{1}{4}d.$ per *lb.*?

Ans. £5..4..10 $\frac{1}{8}$.

What would $160\frac{1}{4}$ gallons cost at $10\frac{3}{4}d.$ per gallon?

Ans. £7..3..6 $\frac{1}{8}$. or $\frac{1}{2}d.$

Note, The price of all the above is to be found at $1d$ and multiplied by the price.

EXAMPLES.

THE price of each of the following is to be found at $1s.$ and multiplied by the price.

What would 44 gallons cost at $11s.$ per gallon?

Ans. £24..4..0.

What will 96 yards cost at $9s.$ per yard? *Ans.* £43..4.

What will 97 yards cost at $7s.$ per yard? *Ans.* £33..19.

What will $89\frac{1}{4}$ gals. cost at $8s.$ per gal.? *Ans.* £35..14.

What will $91\frac{1}{2}$ ounces cost at $9s.$ per ounce?

Ans. £41..3..6.

What will $93\frac{3}{4}$ yards cost at $7s.$ per yard?

Ans. £32..16..3.

What will $104\frac{1}{8}$ ounces cost at $10s.$ per ounce?

Ans. £52..1..3.

What will 44 yards cost at $4s. 1d.$ per yard?

Ans. £8..19..8.

What will 66 yds. cost at $5s. 2d.$ per yd.? *Ans.* £17..1.

What will $91\frac{1}{2}$ gallons cost at $8s. 1d.$ per gallon?

Ans. £36..19..7 $\frac{1}{2}$.

What will $110\frac{1}{4}$ ounces cost at 8s. 2d. per ounce?

£5..10.. 3 at 1s.

8 2 18s. $4\frac{1}{2}$ d. to bring in.

£45.. 0.. $4\frac{1}{2}$ *Ans.*

All the foregoing should be done in one line, by the above method.

What would 80 yards cost at 3s. 3d. per yard?

£4
 $3\frac{1}{4}$

£13 *Ans.*

What would 84 gallons cost at 5s. 6d. per gallon?

Ans. £23..2.

What would 90 yards cost at 6s. 9d. per yard?

Ans. £30..7..6.

What will 124 gallons cost at 10s. 3d. per gallon?

Ans. £63..11.

What will $145\frac{1}{2}$ ounces cost at 11s. 3d. per ounce?

Ans. £81..16.. $10\frac{1}{2}$.

What will $163\frac{3}{4}$ yards cost at 12s. 6d. per yard?

£8.. 3.. 9

$12\frac{1}{2}$

£4..1.. $10\frac{1}{2}$. to bring in.

£102.. 6.. $10\frac{1}{2}$ *Ans.*

What will $181\frac{1}{2}$ yards cost at 11s. 3d. per yard?

Ans. £102..1.. $10\frac{1}{2}$.

What will $204\frac{3}{4}$ stones cost at 7s. 9d. per stone?

Ans. £79..6.. $9\frac{3}{4}$.

The following calculations being similar to the foregoing, may be done by the Rule laid down: viz. By taking the pence, of the price of one article, as shillings, by which you have the price of a dozen articles, which being multiplied by the number of dozens in the quantity, you have the answer.

EXAMPLES.

WHAT will 24 articles cost at 7s. 3d. each?

£4.. 7

2

£8..14 *Ans.*

What will 132 articles cost at $8s. 9\frac{1}{2}d.$ each?

$$\begin{array}{r} £5.. 5.. 6 \\ \underline{11} \\ £58.. 0.. 6 \text{ Ans.} \end{array}$$

What will 108 articles cost at $15s. 7\frac{3}{4}d.$ each?

Ans. £84..9..9.

What will 72 articles cost at $3s. 10\frac{1}{2}d.$ each?

Ans. £13..19.

What will 84 articles cost at $5s. 8\frac{1}{8}d.$ each?

Ans. £23..16..10 $\frac{1}{2}$.

What will 102 articles cost at $12s. 8\frac{1}{2}d.$ each?

£7..12..6 the price of 1 dozen.
8 $\frac{1}{2}$ dozen, being = 102.

£64..16..3 *Ans.*

What will 147 articles cost at $17s. 10\frac{3}{4}d.$ each?

£10..14.. 9
 $\underline{12\frac{1}{4}}$ £2..13..8 $\frac{1}{4}$. to bring in.
£131..10.. 8 $\frac{1}{4}$ *Ans.*

What will 181 articles cost at $16s. 8\frac{3}{4}d.$ each?

£10.. 0.. 9
 $\underline{15}$ 16s. 8 $\frac{3}{4}d.$ price of 1 to bring in.
£151.. 7..11 $\frac{3}{4}$ *Ans.*

MISCELLANEOUS EXAMPLES.

2 cwt. 2 qrs. 24 lbs. at 5d. per lb.	<i>Ans.</i> £6..6..8.
2 cwt. 3 qrs. 14 lbs. at 6d. per lb.	<i>Ans.</i> £8..1.
3 cwt. 3 qrs. 12 lbs. at 6 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £11..14.
3 cwt. 3 qrs. 24 lbs. at 7d. per lb.	<i>Ans.</i> £11..19.
4 cwt. 2 qrs. 20 lbs. at 7 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £16..7..6.
5 cwt. 2 qrs. 16 lbs. at 8d. per lb.	<i>Ans.</i> £21..1..4.
6 cwt. 1 qr. 20 lbs. at 8 $\frac{1}{4}d.$ per lb.	<i>Ans.</i> £24..15.
7 cwt. 2 qrs. 20 lbs. at 8 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £30..9..2.
8 cwt. 2 qrs. 17 lbs. at 9d. per lb.	<i>Ans.</i> £36..6..9.
8 cwt. 3 qrs. 20 lbs. at 9 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £39..11..8.
9 cwt. 2 qrs. 16 lbs. at 10 $\frac{1}{4}d.$ per lb.	<i>Ans.</i> £46..2..6.
9 cwt. 2 qrs. 20 lbs. at 10 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £47..8..6.
10 cwt. 2 qrs. 24 lbs. at 10 $\frac{3}{4}d.$ per lb.	<i>Ans.</i> £53..15.
12 cwt. 0 qrs. 12 lbs. at 11d. per lb.	<i>Ans.</i> £62..3.
16 cwt. 2 qrs. 20 lbs. at 11 $\frac{1}{2}d.$ per lb.	<i>Ans.</i> £89..10..2.

24 cwt. 1 qr. 8 lbs. at $4\frac{1}{2}d.$ per lb. *Ans.* £51..1..6.

26 cwt. 2 qrs. 18 lbs. at 1s. 8d. per lb. *Ans.* £248..16..8.

Note, 1s. 8d. is one-twelfth of a £.

3 t. 3 cwt. 0 qrs. 5 lbs. at 2s. 6d. per lb. *Ans.* £882..12..6.

11 cwt. 3 qrs. 26 lbs. at 84s. per cwt. *Ans.* £50..6..6.

10 cwt. 0 qrs. 2 lbs. at 93s. 4d. per cwt. *Ans.* £46..15.

11 cwt. 3 qrs. 26 lbs. at £5..12. per cwt. *Ans.* £67..2.

9 cwt. 2 qrs. at £5..10..6. per cwt. *Ans.* £52..9..9.

75 cwt. 3 qrs. 7 lbs. at £6..1..8. per cwt. *Ans.* £461..3..10 $\frac{1}{4}d.$

290 cwt. 3 qrs. 14 lbs. at £4..2..6. per cwt. *Ans.* £1199..17..2 $\frac{1}{4}d.$

61 a. 2 r. 8 p. at £3..10. per acre. *Ans.* £215..8..6.

76 a. 3 r. 24 p. at £4..6..8. per acre. *Ans.* £333..4..8.

576 a. 3 r. 26 p. at £7..1. per acre. *Ans.* £4076..4..7 $\frac{3}{4}$.

15 oz. 8 dwts. 4 grs. at 3s. 4d. per oz. *Ans.* £2..11..4 $\frac{1}{4}$.

147 oz. 16 dwts. 18 grs. at £3..10. per oz. *Ans.* £517..8s. 7 $\frac{1}{2}d.$

60 oz. 7 dwts. at 8s. 6d. per oz. *Ans.* £25. 12s. 11 $\frac{1}{2}d.$

Interest of £20. for 5 months at 5 per cent. *Ans.* 8s. 4d.

£22. for 7 months at 5 per cent. *Ans.* 12s. 10d.

£27. for 8 months at 5 per cent. *Ans.* 18s.

£33. for 11 months at 5 per cent. *Ans.* £1. 10s. 3d.

£36. 10s. for 6 months at 5 per cent. *Ans.* 18s. 3d.

£39. 15s. for 4 months at 5 per cent. *Ans.* 13s. 3d.

£47. 5s. for 6 months at 5 per cent. *Ans.* £1. 3s. 7 $\frac{1}{2}d.$

£55. 10s. for 10 months at 5 per cent. *Ans.* £2. 6s. 3d.

£99. 15s. for 8 months at 5 per cent. *Ans.* £3. 6s. 6d.

£126. 2s. 6d. for 8 months at 5 per cent. *Ans.* £4. 4s. 1d.

£133. 15s. for 11 months at 5 per cent. *Ans.* £6. 2s. 7 $\frac{1}{4}d.$

£999. 15s. for 8 months at 5 per cent. *Ans.* £33. 6s. 6d.

£21. for 6 months at 6 per cent. *Ans.* 12s. 7 $\frac{1}{5}d.$

£31. for 7 months at 6 per cent. *Ans.* £1. 1s. 8 $\frac{2}{5}d.$

£46. 10s. for 6 months at 6 per cent. *Ans.* £1. 7s. 10 $\frac{4}{5}d.$

£66. 15s. for 4 months at 6 per cent. *Ans.* £1. 6s. 8 $\frac{2}{5}d.$

£75. 15s. for 8 months at 6 per cent. *Ans.* £3. 0s. 7 $\frac{1}{5}d.$

£95. 10s. for 10 months at 6 per cent. *Ans.* £4. 15s. 6d.

£125. for 11 months at 6 per cent. *Ans.* £6. 17s. 6d.

£175. 10s. for 10 months at 6 per cent. *Ans.* £8. 15s. 6d.

£240. 10s. for 11 months at 6 per cent. *Ans.* £13. 4s. 6 $\frac{1}{2}d.$

£45. for 6 months at 4 per cent. *Ans.* 18s. 0d.

£60. for 8 months at 4 per cent. *Ans.* £1. 12s. 0d.

£70. 10s. 6d. for 9 months at 4 per cent. *Ans.* £2. 2s. 3 $\frac{3}{4}d.$

- £85. 15s. for 4 months at 4 per cent. *Ans.* £1. 2s. 10 $\frac{2}{3}$ d.
 £40. for 6 months at 4 $\frac{1}{2}$ per cent. *Ans.* 18s. 0d.
 £50. for 7 months at 4 $\frac{1}{2}$ per cent. *Ans.* £1. 6s. 3d.
 £60. for 11 months at 4 $\frac{1}{2}$ per cent. *Ans.* £2. 9s. 6d.
 £75. 10s. for 8 months at 4 $\frac{1}{2}$ per cent. *Ans.* £2. 5s. 3 $\frac{3}{4}$ d.
 £85. 10s. for 12 mo. at 4 $\frac{1}{2}$ per cent. *Ans.* £3. 16s. 11 $\frac{1}{4}$ d.
 £95. 6s. 8d. for 1 year and 4 months at 4 $\frac{1}{2}$ per cent. *Ans.* £5. 14s. 4 $\frac{1}{2}$ d.
 £135. for 1 year and 8 months at 4 $\frac{1}{2}$ d. per cent. *Ans.* £10. 2s. 6d.
 £775. 10s. for 1 year and 10 months at 4 $\frac{1}{2}$ per cent. *Ans.* £63. 19s. 6 $\frac{3}{4}$ d.
 £325. for 1 month at 3 per cent. *Ans.* 16s. 3d.
 £47. 10s. for 5 months at 3 per cent. *Ans.* 11s. 10 $\frac{1}{2}$ d.
 £128. 5s. for 6 months at 3 per cent. *Ans.* £1. 18s. 5 $\frac{1}{2}$ d.
 £207. for 7 months at 3 per cent. *Ans.* £3. 12s. 5 $\frac{2}{5}$ d.
 £17. 10s. for 10 months at 3 per cent. *Ans.* 8s. 9d.
 £1406. for 12 months at 3 per cent. *Ans.* £42. 3s. 7 $\frac{1}{5}$ d.
 £7. 6s. 8d. for 14 months at 3 per cent. *Ans.* 5s. 1 $\frac{3}{5}$ d.
 £123. 17s. 6d. for 9 months at 3 per cent. *Ans.* £2. 15s. 9d.
 £145. 10s. for 11 months at 3 per cent. *Ans.* £4. 0s. 0 $\frac{1}{4}$ d.
 £165. 5s. for 8 months at 3 per cent. *Ans.* £3. 6s. 1 $\frac{1}{5}$ d.
 £175. 6s. 8d. for 12 mo. at 3 per cent. *Ans.* £5. 5s. 2 $\frac{2}{5}$ d.
 £49. for 4 months at 2 $\frac{1}{2}$ per cent. *Ans.* 8s. 2d.
 £66. 15s. for 3 months at 2 $\frac{1}{2}$ per cent. *Ans.* 8s. 4 $\frac{1}{8}$ d.
 £99. 15s. for 8 months at 2 $\frac{1}{2}$ per cent. *Ans.* £1. 13s. 3d.
 £240. for 11 months at 2 $\frac{1}{2}$ per cent. *Ans.* £5. 10s. 0d.
 £360. for 8 months at 2 $\frac{1}{2}$ per cent. *Ans.* £6. 0s. 0d.
 £365. for 1 yr. 8 mo. at 2 $\frac{1}{2}$ per cent. *Ans.* £15. 4s. 2d.
 £65. for 21 days at 5 per cent. *Ans.* 3s. 9d.
 £480. 10s. for 36 days at 5 per cent. *Ans.* £2. 7s. 4 $\frac{1}{2}$ d.
 £120. for 90 days at 6 per cent. *Ans.* £1. 9s. 7d.
 £45. for 40 days at 6 per cent. *Ans.* 5s. 11d.
 £127. for 80 days at 3 per cent. *Ans.* 16s. 8d.
 Amount of 17 yds. of calico at 11d. per yard. *Ans.* 15s. 7d.
 19 $\frac{1}{2}$ yards at 10d. per yard. *Ans.* 16s. 3d.
 22 $\frac{3}{4}$ lbs. of sugar at 8d. per lb. *Ans.* 15s. 2d.
 27 $\frac{1}{2}$ lbs. of lump sugar at 11d. per lb. *Ans.* £1. 5s. 2 $\frac{1}{2}$ d.
 39 $\frac{3}{4}$ lbs. of starch at 8d. per lb. *Ans.* £1. 6s. 6d.
 45 $\frac{1}{4}$ oz. of tea at 10d. per oz. *Ans.* £1. 17s. 8 $\frac{1}{2}$ d.
 66 $\frac{3}{4}$ lbs. of lamb at 8d. per lb. *Ans.* £2. 4s. 6d.
 99 $\frac{1}{4}$ lbs. of bacon at 10d. per lb. *Ans.* £4. 2s. 8 $\frac{1}{2}$ d.
 120 yards of muslin at 10 $\frac{3}{4}$ d. per yard. *Ans.* £5. 7s. 6d.

133 yards of stuff at $11\frac{1}{2}d.$ per yard.	<i>Ans.</i> £6. 7s. $5\frac{1}{2}d.$
$144\frac{1}{2}$ yards of riband at $8\frac{1}{4}d.$ per yard.	<i>Ans.</i> £4. 19s. $4\frac{1}{8}d.$
$365\frac{1}{2}$ yards of lace at $10\frac{1}{2}d.$ per yard.	<i>Ans.</i> £15. 19s. $9\frac{3}{4}d.$
241 pair of gloves at $11\frac{3}{8}d.$ per pair.	<i>Ans.</i> £11. 8s. $5\frac{3}{8}d.$
961 pair of gloves at $7\frac{7}{8}d.$ per pair.	<i>Ans.</i> £31. 10s. $7\frac{7}{8}d.$
1680 yards of lace at $7\frac{1}{8}d.$ per yard.	<i>Ans.</i> £49. 17s. 6d.
2000 yards of lace at $9\frac{1}{4}d.$ per yard.	<i>Ans.</i> £77. 1s. 8d.
24 yards of silk at 2s. 3d. per yard.	<i>Ans.</i> £2. 14s. 0d.
26 yards of silk at 3s. 5d. per yard.	<i>Ans.</i> £4. 8s. 10d.
31 lbs. of tea at 4s. 2d. per lb.	<i>Ans.</i> £6. 9s. 2d.
44 lbs. of tea at 3s. 9d. per lb.	<i>Ans.</i> £8. 5s. 0d.
66 lbs. of tea at 5s. 6d. per lb.	<i>Ans.</i> £18. 3s. 0d.
81 lbs. of tea at 6s. 9d. per lb.	<i>Ans.</i> £27. 6s. 9d.
121 lbs. of tea at $6s. 10\frac{1}{2}d.$ per lb.	<i>Ans.</i> £41. 11s. $10\frac{1}{2}d.$
161 gal. of gin at 11s. 3d. per gal.	<i>Ans.</i> £90. 11s. 3d.
240 tons of coal at 11s. $11\frac{3}{4}d.$ per ton.	<i>Ans.</i> £143. 15s. 0d.
180 tons of coal at 16s. 9d. per ton.	<i>Ans.</i> £150. 15s. 0d.
$27\frac{1}{2}$ cwt. of cheese at 12s. per cwt.	<i>Ans.</i> £16. 10s. 0d.
122 cwt. at 17s. 9d. per cwt.	<i>Ans.</i> £108. 5s. 6d.
142 cwt. 2 qrs. at 19s. 6d. per cwt.	<i>Ans.</i> £138. 18s. 9d.
162 cwt. 1 qr. at 7s. 6d. per cwt.	<i>Ans.</i> £60. 16s. $10\frac{1}{2}d.$
$242\frac{1}{2}$ of any thing at 12s. 9d. each.	<i>Ans.</i> £154. 7s. 1d.

GAIN PER CENT.

IN estimating a profit as a rate per cent. persons are not agreed, and the practice of some traders, and the theory of the schools, are at variance.

Suppose we buy at 4 and sell at 5, the Arithmetician reckons this a gain of 1 on 4, or 25 per cent. while the Trader, counting on the selling price, makes it a gain of only 1 on 5, or 20 per cent.; as every person is at liberty to adopt which method he considers correct, we shall here introduce Rules to discover the rate per cent. gained, applicable to both on either method.

To find the gain per cent. counting on the *cost price*.

RULE.—Find what part the gain is of the *first cost*, and divide £100. by the same, the product is your gain per cent.

To find the gain per cent. counting on the *selling price*.

RULE.—Find what part the gain is of the *selling*

price, and divide £100. by the same, the product is your gain per cent.

EXAMPLES. *Calculating on first cost price.*

BOUGHT silk handkerchiefs at 5s. and sold them for 5s. 10d. each, what is the gain per cent. ?

$$10d. \text{ of } 5s. \text{ is } \frac{1}{6})100$$

£16..13..4 gain per cent.

That is, if you had laid out £100. in the purchase of articles at 5s. each, and sold them at 5s. 10d. each, you would, on the expenditure of £100., have gained £16..13..4. or $16\frac{2}{3}$ per cent.

Bought tea at 5s. 4d. per lb. and sold it at 6s. what is the gain per cent. ?

The difference between 5s. 4d. cost, and 6s. selling price, is 8d.

8d. of 5s. 4d. is $\frac{1}{8}$. 8 divided into £100. gives $12\frac{1}{2}$ per cent.

Bought cheese at 8d. per lb. and sold at 10d. what is the gain per cent. ?

$$2d. \text{ gain, is of cost price } \frac{1}{4})100$$

£25 gain per cent.

Bought mustard at 10d. per lb. and sold it at 11 $\frac{1}{2}$ d. what is the gain per cent. ?

$$1d. \text{ of } 10d. \text{ is } \frac{1}{10})100$$

10

$$\frac{1}{2}d. \text{ of } 1d. \text{ is } \frac{1}{2} \quad 5$$

£15 gain per cent.

Bought at 2s. 6d. and sold at 3s. 0 $\frac{1}{2}$ d. what is the gain per cent. ?

$$6d. \text{ of } 2s. 6d. \text{ is } \frac{1}{5})100$$

20

$$\frac{1}{2}d. \text{ of } 6d. \text{ is } \frac{1}{12} \quad 1..13.. 4$$

£21..13.. 4 gain per cent.

Bought at 1s. and sold at 1s. 0 $\frac{1}{2}$ d. what is the gain per cent. ?

$$\frac{1}{2}d. \text{ of } 1s. \text{ is } \frac{1}{4})100$$

£4..3..4 gain per cent.

EXAMPLES. *Calculating on the selling price.*

Bought gunpowder at 2s. 6d. per lb. and sold it at 3s. what is the gain per cent.?

3s. gain 6d. which is $\frac{1}{6}$ part 6)100

£16..13..4 gain per cent.

Bought mahogany at 19d. the foot, and sold it at 20d. what is the gain per cent.?

20d. gained, 1d. $\frac{1}{20}$)100

£5 gain per cent.

Bought at 8d. and sold at 9 $\frac{1}{2}$ d. what is the gain per cent.?

9 $\frac{1}{2}$ d. gained 1 $\frac{1}{2}$ d.

$\frac{1}{2}$ d. of 9 $\frac{1}{2}$ d. is $\frac{1}{19}$)100

$\overline{51\frac{5}{9}}$
3

£15 $\frac{1}{19}$ gain per cent. or £15..15..9 $\frac{9}{19}$.
being about 15 $\frac{3}{4}$ per cent.

When the gain is an awkward part of either the cost or selling price, the following method can be resorted to with advantage.

Bought chocolate at 15 $\frac{1}{4}$ d. and sold it at 17 $\frac{1}{2}$ d. required the rate per cent. estimating on the *selling* price.

17 $\frac{1}{2}$ d. gained 2 $\frac{1}{4}$ d. being the difference between the two prices.

If 70 gain 9, what will 100 gain?

100
9
 $\overline{70)900}$ (12 $\frac{6}{7}$, nearly 13 per cent.
200

10 $\left\{ \frac{60}{70} \right\}$ $\frac{6}{7}$

The same, estimating on the *cost* price.

15 $\frac{1}{4}$ d. gain 2 $\frac{1}{4}$ d. being the difference between what is given and what is received for the article.

If 61 gain 9, what will 100 gain?

100
9
 $\overline{61)900}$ (14..18..4 $\frac{20}{61}$ nearly 15 per cent.
290
 $\overline{56}$ } 18..4 $\frac{20}{61}$
61 }

The preceding show the difference between estimating on the *cost* and *selling* price.

An abbreviated method of dividing sums of money by 100 and 200, and by subdivision, facilitating the operation of dividing by any number of hundreds.

RULE for dividing by 100 in one line of figures, or at a glance—Cut off 2 figures to the right (the units and tens) consider those not cut off as pounds, and those cut off, divided by 5 give the shillings.

EXAMPLES.

DIVIDE £1495. by 100.

$$14|95 = £14..19. \text{ Ans.}$$

Thus, 100 into 1495 goes 14 times, the 95 left is usually multiplied by 20, and the product again divided by 100 to give the shillings, but we divide the shillings cut off by 5, because 20 into 100, goes 5 times.

Divide £1|65 by 100. *Ans.* £1..13.

Note, If there are any pounds remaining after dividing by 5, annex a cipher, and consider them as farthings, observing to reject 1 at 25.

Divide £19|82. by 100. *Ans.* £19..16..4 $\frac{3}{4}$.

Thus, the 19 cut off are pounds; 5 into 82 went 16 times, leaving 2, with a cipher, made 20, rejecting 1 left 19 farthings or 4 $\frac{3}{4}$ d.

Divide £4|43. by 100. *Ans.* £4. 8..7.

If there should be any shillings, instead of adding a cipher, add half the shillings, and proceed as before.

Divide £34|53..18. by 100. *Ans.* £34..10..9 $\frac{1}{2}$.

Thus, the 3 left by adding 9 ($\frac{1}{2}$ the 18s.) gave 39 farthings, one rejected left 38 farthings, or 9 $\frac{1}{2}$ d.

The above will be sufficient, as Examples are capable of being multiplied to any extent.

RULE to divide £. s. d. by 200, in a line of figures, or at a glance.—Cut off the unit figure of the pounds, consider those not cut off as shillings, the unit figure cut off consider as pence, and as many fifths; for 4 or 5 in the shillings, allow $\frac{1}{4}$ d. for 8 or 10 allow $\frac{1}{2}$ d. for 13 or 15 allow $\frac{3}{4}$ d. and for 16s. 8d. or upwards, allow a penny.

Note, The same operation is performed in calculating interest at £6. per cent., and discount, &c. at $\frac{1}{2}$ per cent., see page 80.

EXAMPLES.

DIVIDE £10. by 200. *Ans.* 1*s.*

As by the Rule the unit figure is cut off, and those not cut off are shillings.

Divide £142. by 200.

14|2 *Ans.* 14*s.* 2 $\frac{2}{5}$ *d.*

As by the Rule, the unit figure is to be considered as pence, and as many fifths.

What is the price of one silk shawl, if 200 cost £260..12..6.

Here the cipher is cut off, leaving 26|0 equal to £1..6. the cipher is pence, and for 12*s.* 6*d.* $\frac{3}{4}$ *d.* are allowed, see Rule. *Ans.* £1..6..0 $\frac{3}{4}$ *d.* each.

What will 1 *cwt.* of iron cost, if for 200 *cwt.* are paid £385..4..3 $\frac{1}{4}$. *Ans.* £1..18..6 $\frac{1}{4}$. see Rule.

Note. The cause of the above is explained on page 103, see Interest, Commission, or Discount, at $\frac{1}{2}$ per cent.

The same method can be applied to dividing by any number of hundreds, by subdividing the Answers produced by this plan.

The very great use of a Table for calculating the Wages of Servants, &c., is the only apology necessary for so far deviating from our plan as to introduce any thing into our work in the shape of a Table, that can be arrived at, by a short and simple operation.

A TABLE OF WAGES,

Showing what any sum from £2. to £30. per annum, is per calendar month, week, or day.

Year.			Month.			Week.			Day.		
£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
2	0	0	0	3	4	0	0	9 $\frac{1}{4}$	0	0	1 $\frac{1}{4}$
2	2	0	0	3	6	0	0	9 $\frac{3}{4}$	0	0	1 $\frac{3}{4}$
2	5	0	0	3	9	0	0	10 $\frac{1}{4}$	0	0	1 $\frac{5}{4}$
2	10	0	0	4	2	0	0	11 $\frac{1}{2}$	0	0	1 $\frac{3}{2}$
2	12	6	0	4	4 $\frac{1}{2}$	0	1	0	0	0	1 $\frac{1}{2}$
2	15	0	0	4	7	0	1	0 $\frac{3}{4}$	0	0	1 $\frac{3}{4}$
3	0	0	0	5	0	0	1	2	0	0	2
3	3	0	0	5	3	0	1	2 $\frac{1}{2}$	0	0	2
3	5	0	0	5	5	0	1	3	0	0	2
3	10	0	0	5	10	0	1	4	0	0	2 $\frac{1}{4}$
3	13	6	0	6	1 $\frac{1}{2}$	0	1	5	0	0	2 $\frac{1}{4}$
3	15	0	0	6	3	0	1	5 $\frac{1}{2}$	0	0	2 $\frac{1}{2}$
4	0	0	0	6	8	0	1	6 $\frac{1}{2}$	0	0	2 $\frac{3}{4}$
4	4	0	0	7	0	0	1	7 $\frac{1}{2}$	0	0	2 $\frac{3}{4}$
4	10	0	0	7	6	0	1	9	0	0	3
4	15	0	0	7	11	0	1	9 $\frac{1}{2}$	0	0	3
5	0	0	0	8	4	0	1	11	0	0	3 $\frac{1}{4}$
5	5	0	0	8	9	0	2	0 $\frac{1}{4}$	0	0	3 $\frac{1}{4}$
5	10	0	0	9	2	0	2	1 $\frac{1}{2}$	0	0	3 $\frac{1}{2}$

Year.			Month.			Week.			Day.		
£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
5	15	6	0	9	7½	0	2	2½	0	0	3¾
6	0	0	0	10	0	0	2	3¾	0	0	4
6	6	0	0	10	6	0	2	5	0	0	4
6	10	0	0	10	10	0	2	6	0	0	4½
6	16	6	0	11	4½	0	2	7½	0	0	4½
7	0	0	0	11	8	0	2	8½	0	0	4½
7	5	0	0	12	1	0	2	9½	0	0	4¾
7	7	0	0	12	3	0	2	10	0	0	4¾
7	10	0	0	12	6	0	2	10½	0	0	5
7	17	6	0	13	1½	0	3	0½	0	0	5½
8	0	0	0	13	4	0	3	1	0	0	5½
8	5	0	0	13	9	0	3	2	0	0	5½
8	8	0	0	14	0	0	3	2¾	0	0	5½
8	15	0	0	14	7	0	3	4½	0	0	5½
8	18	6	0	14	10½	0	3	5½	0	0	5½
9	0	0	0	15	0	0	3	5½	0	0	6
9	5	0	0	15	5	0	3	6½	0	0	6
9	9	0	0	15	9	0	3	7½	0	0	6½
9	15	0	0	16	3	0	3	9	0	0	6½
10	0	0	0	16	8	0	3	10	0	0	6½
10	5	0	0	17	1	0	3	11½	0	0	6½
10	10	0	0	17	6	0	4	0½	0	0	7
10	15	0	0	17	11	0	4	1¾	0	0	7
11	0	0	0	18	4	0	4	3	0	0	7½
11	11	0	0	19	3	0	4	5½	0	0	7½
12	0	0	1	0	0	0	4	7½	0	0	8
12	10	0	1	0	10	0	4	9½	0	0	8½
12	12	0	1	1	0	0	4	10	0	0	8½
13	0	0	1	1	8	0	5	0	0	0	8½
13	10	0	1	2	6	0	5	2½	0	0	8½
13	13	0	1	2	9	0	5	3	0	0	9
14	0	0	1	3	4	0	5	4½	0	0	9½
14	14	0	1	4	6	0	5	8	0	0	9½
15	0	0	1	5	0	0	5	9	0	0	10
15	10	0	1	5	10	0	5	11½	0	0	10½
15	15	0	1	6	3	0	6	0½	0	0	10½
16	0	0	1	6	8	0	6	2	0	0	10½
16	10	0	1	7	6	0	6	4	0	0	11
16	16	0	1	8	0	0	6	5½	0	0	11
17	0	0	1	8	4	0	6	6½	0	0	11½
17	10	0	1	9	2	0	6	8½	0	0	11½
17	17	0	1	9	9	0	6	10½	0	0	11½
18	0	0	1	10	0	0	6	11	0	0	11½
18	10	0	1	10	10	0	7	1½	0	1	0½
18	18	0	1	11	6	0	7	3	0	1	0½
19	0	0	1	11	8	0	7	3½	0	1	0½
19	10	0	1	12	6	0	7	5½	0	1	0½
19	19	0	1	13	3	0	7	8	0	1	1
20	0	0	1	13	4	0	7	8	0	1	1½
21	0	0	1	15	0	0	8	0½	0	1	1½
22	0	0	1	16	8	0	8	5½	0	1	2½
23	0	0	1	18	4	0	8	10	0	1	3
24	0	0	2	0	0	0	9	2½	0	1	3½
25	0	0	2	1	8	0	9	7½	0	1	4½
25	4	0	2	2	0	0	9	8½	0	1	4½
26	0	0	2	3	4	0	10	0	0	1	5
26	10	0	2	4	2	0	10	2½	0	1	5½
27	0	0	2	5	0	0	10	4½	0	1	5½
28	0	0	2	6	8	0	10	9	0	1	6½
29	0	0	2	8	4	0	11	1½	0	1	7
30	0	0	2	10	0	0	11	6½	0	1	7½

Note. As the exact sum per day or week cannot be arrived at without introducing a useless fraction, we have given the price per day the advantage of the fraction in some instances.

A CONTRAST,

Showing the difference between the ordinary mode of calculating and the System of Doctor Willcolkes and Messrs. Fryer, and for the attainment of which the clearest Rules and most simple Examples will be found in this work.

EXAMPLES extracted from the *Book*, and worked by the usual Rules.

144 quarts at 5d.

By Compound Multiplication.

$$\begin{array}{r}
 d. \\
 5 \\
 12 \times 12 \\
 \hline
 60 \\
 12 \\
 \hline
 12)720 \text{ pence.} \\
 2|0|6|0 \text{ shillings.} \\
 \hline
 \pounds 3..0..0 \text{ Ans.}
 \end{array}$$

New System.

$$\begin{array}{r}
 s. \\
 144 \text{ at } 1d. \text{ each } 12 \\
 5 \\
 \hline
 \pounds 3..0..0 \text{ Ans.}
 \end{array}$$

$140\frac{3}{4}$ at 10d. each.

By Rule of Three.

$$\begin{array}{r}
 \text{As } 1 : 10 :: 140\frac{3}{4} \\
 4 \\
 \hline
 4 \\
 \hline
 563 \\
 10 \\
 \hline
 4)5630 \\
 12)1407\frac{1}{2} \\
 2|0|117.. 3\frac{1}{2} \\
 \hline
 \text{Ans. } \pounds 5..17.. 3\frac{1}{2}
 \end{array}$$

New System.

$$\begin{array}{r}
 140\frac{3}{4} \text{ at } 1d. = 11s.. 8\frac{3}{4}d. \\
 10 \\
 \hline
 \pounds 5..17.. 3\frac{1}{2} \text{ Ans.}
 \end{array}$$

199 at 7d. each.

By Compound Multiplication.

$$\begin{array}{r}
 d. \\
 7 \\
 10 \\
 \hline
 5..10 \text{ price of } 10. \\
 10 \\
 \hline
 2..18.. 4 \text{ price of } 100 \\
 2..12.. 6 \text{ price of } 90 \\
 5.. 3 \text{ price of } 9 \\
 \hline
 \pounds 5..16.. 1 = \text{of} = 199 \text{ Ans.}
 \end{array}$$

New System.

$$\begin{array}{r}
 199 \text{ at } 1d. \text{ each} = 16s.. 7d. \\
 7 \\
 \hline
 \pounds 5..16.. 1 \text{ Ans.}
 \end{array}$$

$64\frac{1}{4}$ at $10\frac{3}{4}d.$

By Rule of Three.

$$\begin{array}{r}
 1 : 10\frac{3}{4}d. :: 64\frac{1}{4} \\
 4 \quad 4 \quad 4 \\
 \hline
 4 \quad 43 \quad 257 \\
 \hline
 43 \\
 771 \\
 1028 \\
 4)11051 \\
 4)2762\frac{3}{4} \text{ farthings.} \\
 12)690\frac{1}{16} \\
 2|0|57.. 6\frac{1}{16} \\
 \hline
 \text{Ans. } \pounds 2..17.. 6\frac{1}{16}
 \end{array}$$

Here a knowledge of Vulgar Fractions is necessary by the usual method.

New System.

$$64\frac{1}{4} \text{ at } 1d. = 5s.. 4\frac{1}{4}d.$$

$$\begin{array}{r} 10\frac{3}{4} \\ \hline \text{£}2..17.. 6\frac{3}{4} \text{ Ans.} \end{array}$$

$$4s. 0\frac{5}{16}d. \text{ at } \frac{3}{4}d. \text{ to take in.}$$

$$1960\frac{1}{2} \text{ at } 11\frac{1}{4}d.$$

By Practice.

$$d. \quad 6 \text{ is } \frac{1}{2} \dots\dots 1960$$

$$4 \text{ is } \frac{1}{3} \dots\dots 980$$

$$1 \text{ is } \frac{1}{4} \dots\dots 653.. 4$$

$$\frac{1}{4} \text{ is } \frac{1}{4} \dots\dots 163.. 4$$

$$\frac{1}{2} \text{ cost} \dots\dots 40..10$$

$$0.. 5\frac{5}{8}$$

$$2|0)183|7..11\frac{5}{8}$$

$$\text{£}91..17..11\frac{5}{8} \text{ Ans.}$$

New System.

$$1960\frac{1}{2} \text{ at } 1d. = \text{£}8.. 3.. 4\frac{1}{2}$$

$$11\frac{1}{4}$$

$$\text{£}91..17..11\frac{5}{8} \text{ Ans.}$$

$$\text{£}2..0..10\frac{1}{8} \text{ to take in.}$$

The preceding Contrasts will be found in the Examples to First General Rule, Page 34.

$$31 \text{ yards of linen at } 3s. \text{ per yard.}$$

By Simple Multiplication.

£.

31

3

$$2|0)9|3$$

$$\text{£}4..13.. 0 \text{ Ans.}$$

New System.

£. s.

$$31 \text{ at } 1s. \text{ each} = 1..11$$

3

$$\text{£}4..13 \text{ Ans.}$$

$$69\frac{1}{2} \text{ at } 11s.$$

By Rule of Three.

$$yd. \quad 1 : 11 : : yds. \quad 69\frac{1}{2}$$

$$\begin{array}{r} 2 \\ \hline 2 \end{array}$$

$$139$$

$$11$$

$$139$$

$$139$$

$$2)1529$$

$$2|0)76|4.. 6$$

$$\text{£}38.. 4.. 6 \text{ Ans.}$$

New System.

£. s. d.

$$69\frac{1}{2} \text{ at } 1s. = 3.. 9.. 6$$

11

$$\text{£}38.. 4.. 6 \text{ Ans.}$$

$$44\frac{1}{2} \text{ yards at } 8s. 6d.$$

By Rule of Three.

$$yd. \quad 1 : 8.. 6.. : : yds. \quad 44\frac{1}{2}$$

$$\begin{array}{r} 2 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 2 \\ \hline 102 \end{array}$$

$$89$$

$$89$$

$$918$$

$$816$$

$$2)9078$$

$$12)4539$$

$$2|0)37|8.. 3$$

$$\text{£}18..18.. 3 \text{ Ans.}$$

New System.

$$44\frac{1}{2} \text{ at } 1s. = \text{£}2.. 4.. 6$$

8½

$$\text{£}18..18.. 3 \text{ Ans.}$$

$$\text{£}1..2..3. \text{ to take in.}$$

91½ gallons at 7s. 9d.

By Practice.

s.	d.	£.	s.	d.
5..	0 is ¼	.....	91..	0.. 0
2..	6 is ½	.....	22..	15.. 0
0..	3 is ⅓	.....	11..	7.. 6
½ gal.	cost	.....	1..	2.. 9
			0..	3.. 10½
			£35..	9.. 1½ Ans

New System.

$$91\frac{1}{2} \text{ at } 1s. = £4..11.. 6$$

$$\underline{\quad\quad\quad} 7\frac{3}{4}$$

$$£35.. 9.. 1\frac{1}{2} \text{ Ans.}$$

126¼ yards at 12s. 1d.

By Rule of Three.

yd.		ys.
1	: 12s.. 1d. ::	126¼
4	12	4
4	145	505
		145
		2525
		2020
		505
		4)73225
		12)18306¼
		2|0)152|5.. 6¼
		Ans. £76.. 5.. 6¼

New System.

$$126\frac{1}{4} \text{ at } 1s. = £6.. 6.. 3$$

$$\underline{\quad\quad\quad} 12 \quad 1$$

$$£76.. 5.. 6\frac{1}{4} \text{ Ans.}$$

10s..6¼d. to take in.

The foregoing contrasts will be found amongst the Examples to Second General Rule, Page 43.

8 cwt. 2 qrs. 8 lbs. at 5¾d. per lb.

By Rule of Three.

lb.	d.	cwt.	qrs.	lbs.
1	: 5¾	::	8..	2.. 8.
	4		4	
farth.	23		34	
			28	
			280	
			68	
			960	pounds.
			23	
			2880	
			1920	
			4)22080	as farthings.
			12)5520	pence.
			2|0)46|0	shillings.
			£23..0..0	Ans.

New System.

$$864$$

$$\underline{\quad\quad\quad} 96$$

$$12)960 \text{ lbs. as pence.}$$

$$80 = £4. \text{ at } 1d. \text{ per lb.}$$

$$\underline{\quad\quad\quad} 5\frac{3}{4}$$

$$£23 \text{ Ans.}$$

11 oz. 8 dwts. 4 grs. of silver at 3s. 4d. per ounce.

By Practice.

	oz.	dwt.	grs.
4d. is ⅓	.....	...	11.. 8.. 4
			3.. 4.. 0
			33.. 0.. 0
			3.. 8.. 0
5 dwts. of an oz. is ⅓	0..	10..	0
2 dwts. of an oz. is ⅓	0..	4..	0
1 dwt. of 2 dwts. is ⅓	0..	2..	0
4 grs. of 1 dwt. is ⅓	0..	0½	0
			2|0)3|8.. 0½
			£1..18.. 0½ Ans.

New System.

$$\begin{array}{r} \text{£. s. d.} \\ \frac{3}{4} \text{ is } \frac{1}{8}) 11.. 8.. 2 \text{ at } \text{£}1. \text{ per ounce.} \\ \hline \text{£}1..18.. 0\frac{1}{3} \text{ Ans.} \end{array}$$

10 cwt. 3 qrs. $8\frac{1}{2}$ lb. at $8\frac{1}{2}$ d. per lb.

By Rule of Three.

$$\begin{array}{r} \text{lb. d. cwt. qrs. lbs.} \\ 1 : 8\frac{1}{2} :: 10.. 3.. 8\frac{1}{2} \\ \hline 2 \quad 2 \quad 4 \\ \hline 2 \quad 17 \quad 43 \\ \hline \quad \quad 28 \\ \hline \quad \quad 352 \\ \quad \quad 86 \\ \hline \quad 1212 \\ \quad \quad 2 \\ \hline \quad 2425 \text{ half pounds.} \\ \quad \quad 17 \\ \hline \quad 16975 \\ \quad 2425 \\ \hline 2)41225 \\ \hline 2)20612\frac{1}{2} \text{ half pence.} \\ 12)10306\frac{1}{4} \\ \hline 2|0)85|8..10\frac{1}{4} \\ \hline \text{£}42..18..10\frac{1}{4} \text{ Ans.} \end{array}$$

New System.

$$\begin{array}{r} 1092\frac{1}{2} \\ 120 \\ \hline 1212\frac{1}{2} \text{ lbs. as pence} = 5.. 1.. 0\frac{1}{2} \\ \hline \text{Ans. } \text{£}42..18..10\frac{1}{4} \end{array}$$

£2..10..6 $\frac{1}{4}$ to take in.

12 cwt. 3 qrs. 12 lbs. at $10\frac{1}{4}$ d.

By Practice.

$$\begin{array}{r} \text{lb. d. cwt. qrs. lbs.} \\ 1 : 10\frac{1}{4} :: 12.. 3.. 12 \\ \hline \quad \quad 4 \\ \hline \quad \quad 51 \\ \quad \quad 28 \\ \hline \quad \quad 420 \\ \quad \quad 102 \\ \hline 6 \text{ is } \frac{1}{2} \dots\dots\dots 1440 \text{ lbs.} \\ 3 \text{ is } \frac{1}{2} \dots\dots\dots 720 \\ 1 \text{ is } \frac{1}{3} \dots\dots\dots 360 \\ \frac{1}{4} \text{ is } \frac{1}{4} \dots\dots\dots 120 \\ \hline \quad \quad 30 \\ \hline 2|0)123|0 \\ \hline \text{Ans. } \text{£}61..10.. 0 \end{array}$$

New System.

$$\begin{array}{r} 1296 \\ 144 \\ \hline 12)1440 \\ \hline 120 = \text{£}6 \\ \quad 10\frac{1}{4} \\ \hline \text{£}61..10 \text{ Ans.} \end{array}$$

5 tons 5 cwt. 3 qrs. 12 lbs. at 3s. per pound.

By Practice.

$$\begin{array}{r} \text{lb. s. tons.cwt. qrs. lbs.} \\ 1 : 3 :: 5.. 5.. 3.. 12 \\ \hline \quad \quad 20 \\ \hline \quad \quad 105 \\ \quad \quad 4 \\ \hline \quad \quad 423 \\ \quad \quad 28 \\ \hline \quad \quad 3396 \\ \quad \quad 846 \\ \hline 2s. 6d. \text{ is } \frac{1}{8} \quad 11856 \\ 6d. \text{ is } \frac{1}{5} \quad 1482 \\ \hline \quad \quad 296.. 8 \\ \hline \text{£}1778.. 8 \text{ Ans.} \end{array}$$

New System.

10596
1260

11856s. = £592..16 at 1s.
3

£1778.. 8 Ans.

9 cwt. 3 qrs. 27 lbs. at 93s. 4d.
per cwt.

By Rule of Three.

lbs.	s.	d.	cwt.	qrs.	lbs.
112	: 93..	4	: :	9..	3..27
	12			4	

1120

39

28

319

80

1119

1120

22380

1119

1119 12

112)1253280(11190

112

..932..6

•133 Ans. £46..12..6

112

•212

112

1008

1008

•••00

New System.

£4..13.. 4

10

46..13.. 4

deduct for 1 lb. 10

£46..12.. 6 Ans.

What will 5 lbs. 10 oz. 0 dwt.
20 grs. of silver cost at 8s. 6d. per
ounce?

By Practice.

lbs. oz. dwt. grs.

5..10. 0..20

12

6d. is $\frac{1}{2}$ = 70

8

500

20 grs. of an 35

oz. is $\frac{1}{24}$. 0. $4\frac{1}{4}$

2|0)59|5.. $4\frac{1}{4}$

£29..15.. $4\frac{1}{4}$ Ans.

New System.

£3..10.. 0 $\frac{1}{2}$ at 1s.

8 $\frac{1}{2}$

£29..15.. $4\frac{1}{4}$ Ans.

What is the interest of £1002.
17s. 6d. for eleven months at 5
per cent.?

By Rule for Interest.

£. s. d.

1002..17.. 6

5 rate per cent.

50|14.. 7.. 6

20

2|87

12

10|50

4

2|00

mo. £. s. d.

6 is $\frac{1}{2}$ 50.. 2..10 $\frac{1}{2}$ Int. for 1 yr.

4 is $\frac{1}{3}$ 25.. 1.. 5 $\frac{1}{4}$

1 is $\frac{1}{4}$ 16..14.. 3 $\frac{1}{2}$

4.. 3.. 6 $\frac{7}{8}$

£45..19.. 3 $\frac{5}{8}$ Ans.

A great deal of the fractional parts of this and many other calculations, are omitted.

By the New System.

$$\begin{array}{r} \text{£. s. d.} \\ 4.. 3.. 6\frac{7}{8} \text{ for one month.} \\ 11 \\ \hline \text{£}45..19.. 3\frac{5}{8} \end{array}$$

What is the interest of £583. 0s. 8d. for one year and 3 months at 4 per cent.?

By Rule for Interest.

$$\begin{array}{r} \text{£. s. d.} \\ 583.. 0.. 8 \\ 4 \\ \hline 23|32.. 2.. 8 \\ 20 \\ \hline 6|42' \\ 12 \\ \hline 5|12 \\ 4 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \text{mo.} \\ \text{£. s. d.} \\ \text{£ is } \frac{1}{4} \left| \begin{array}{l} 23.. 6.. 5 \text{ for 1 year.} \\ 5..16.. 7\frac{1}{4} \end{array} \right. \\ \hline \text{£}29.. 3.. 0\frac{1}{4} \text{ Ans.} \end{array}$$

New System.

$$\begin{array}{r} \text{£}583.. 0.. 8 \\ 10 = \frac{2}{3} \text{ of 15 mo.} \\ \hline \text{£}583|0.. 6.. 8 = \text{£}29..3..0\frac{2}{3} \text{ Ans.} \end{array}$$

What is the interest of £90..7..6 for 6 years, 8 months and 24 days at 5 per cent.?

By Rule for Interest for Years, Months and Days.

$$\begin{array}{r} \text{£. s. d.} \\ 90.. 7.. 6 \\ 5 \end{array}$$

$$\begin{array}{r} 4|51..17.. 6 \\ 20 \\ \hline 10|37 \\ 12 \\ \hline 4|50 \\ 4 \\ \hline 2|00 \end{array}$$

$$\begin{array}{r} \text{mo.} \\ \text{£. s. d.} \\ 6 \text{ are } \frac{1}{2} = 4..10.. 4\frac{1}{2} \text{ for 1 yr.} \\ 2 \text{ are } \frac{1}{3} \quad 6 \end{array}$$

$$\begin{array}{r} 27.. 2.. 3 \text{ for 6 yrs.} \\ 2.. 5.. 2\frac{1}{4} \\ 0..15.. 0\frac{3}{4} \end{array}$$

$$\begin{array}{r} \text{£}30.. 2.. 6 \text{ for 6 yrs. 8 mo.} \\ 0.. 5..11\frac{1}{4} \text{ for 24 days.} \\ \hline \text{£}30.. 8.. 5\frac{1}{4} \text{ Ans.} \end{array}$$

If 365 days gain £4..10..4½, what will 24 days gain?

$$\begin{array}{r} \text{days.} \\ 365 : 4..10.. 4\frac{1}{2} :: 24 \\ 20 \\ 90 \\ 12 \end{array}$$

$$1084$$

$$2$$

$$2169$$

$$24$$

$$8676$$

$$4338 \quad 2)$$

$$365)52056(\quad 142 \text{ halfpence.}$$

$$365 \quad 12)71$$

$$1555 \quad 5..11\frac{1}{4}$$

$$1460$$

$$\cdot \cdot 956$$

$$730$$

$$226 \text{ halfpence.}$$

$$2$$

$$365)452(1 \text{ farthing.}$$

$$365$$

$$\cdot 87$$

By the Improved Method.

6 years, 8 months, as 6s. 8d. is of
a £. $\frac{1}{3}$) £90.. 7.. 6

30.. 2.. 6 for 6 yrs. 8 m.

0.. 5.. $11\frac{1}{4}$ for 24 days.

£30.. 8.. $5\frac{1}{4}$ Ans.

£90.. 7.. 6

8 $\frac{1}{3}$ of 24 days.

£72|3.. 0.. 0 = 6s. $0\frac{1}{4}$ d.

1

s.5.. $11\frac{1}{4}$

What is the interest of £228..
17.. 8 for one year and 4 months
at $4\frac{1}{2}$ per cent.?

£. s. d.

228..17.. 8

$4\frac{1}{2}$

915..10.. 8

114.. 8..10

10|29..19.. 6

20

5|99

12

11|94

4

3|76

4 mon. = $\frac{1}{3}$ £10.. 5.. $11\frac{3}{4}$ for 1 yr.
3.. 8.. $7\frac{3}{4}$

£13..14.. $7\frac{1}{2}$ Ans.

By the ordinary Rule it may be
seen that the 76 over is omitted,
which makes the difference of $\frac{1}{4}$
in the Answer.

By the New System.

£228..17.. 8

12

£274|6..12.. 0 = £13..14.. $7\frac{3}{4}$ d.

What is the interest of £45. for
40 days, at 6 per cent.?

By Double Rule of Three.

£.		£.
If 100		45
in	gain	40 days.
365ds.	£6.	1800
36500		6
		10800
		20
		365|00)2160|00(5s.11d.
		1825
		33500
		12
		365)4020(11 pence.
		365
		370
		365
		005

New System.

£45

40 No. of days.

3|00)18|00

6s. minus 1d. Ans. 5s. 11d.

What is the interest of £120.
for 120 days at $4\frac{1}{2}$ per cent.?

By Rule for Interest.

£.
120
$4\frac{1}{2}$ rate per cent.
480
60
£5|40
20
s.8|00

days. *£. s.* *days.*
 As 365 : 5.. 8 : 120
 20
 108
 120

365)12960(35s. 6d. *Ans.*
 1095
 • 2010
 1825
 • 185
 12

365)2220(6 pence.
 2190
 • 30
 4
 120

New System.

120

90 = $\frac{3}{4}$ of 120 *days.*

3|00)108|00

36 minus 6d.

Ans. £1..15.. 6 at $4\frac{1}{2}$ per cent.

Bought tea at 5s. 4d. per lb., and sold it at 6s., what is the gain per cent.?

By Ordinary Rule.

s. d.

6.. 0

5.. 4

0.. 8

s. d. d. £.

As 5.. 4 : 8 :: 100

12 8

64 64)800(£12..10..0

64

160

128

32

20

64)640(10 shil.

64

...

New System.

8d. of 5s. 4d. is $\frac{1}{8}$)£100

£12..10.. 0

What will 1 *cwt.* of iron cost, if for 200*wt.* are paid £385..4.. $3\frac{1}{4}$?

By Division.

£. s. d. £. s. d.

200)385.. 4.. $3\frac{1}{4}$ (1..18.. $6\frac{1}{4}$ *Ans.*

200

185

20

200)3704(18 shillings.

200

1704

1600

• 104

12

206)1251(6 pence.

1200

• 51

4

200)205(1 farthing.

200

5 remainder.

New System.

£. s. d.

38|5.. 4.. $3\frac{1}{4}$

£1..18.. $6\frac{1}{4}$ *Ans.*

If these CONTRASTS proved nothing more than the difference in the Figures employed, the Authors would not have given them insertion: to show the simplicity of the New System is the principal cause of introducing them.

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